The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XIV. No. 362 JUNE 5, 1926 Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

CHANGE OF ADDRESS.

After this issue the address of the editorial and advertisement departments of THE CHEMICAL AGE *will be Bouverie House, Fleet Street, London, E.C.4, the new headquarters of Benn Brothers, Ltd.*

Telegrams: "Allangas, Fleet, London." Telephone: City 0244.

The Future of Nitrogen Fertilisers

THE recent international conference at Biarritz on nitrogen fertilisers, organised by the British Sulphate of Ammonia Federation and the German Potash Syndicate and attended by delegates from ten different countries, draws attention to the increasing recognition of the importance to all nations of developing to the highest point the fertility of their soils. The papers by Dr. Julius Bueb of Berlin and Mr. F. C. O. Speyer of London, which we are publishing in THE CHEMICAL AGE, indicate both the immense scale and ramifications of the problem and the thoroughness with which it is being studied in its practical no less than in its theoretical aspects. It is a compliment to the British position that the British Federation should be associated with the German Syndicate in bringing the best scientific and commercial authorities of many countries personally together in this way, and that the presidency of such a conference should fall to Mr. Milne Watson, the chairman of the British Federation and the head of the largest gas organisation in the world.

In his paper on the "Determination of price and creation of new forms of nitrogen fertilisers as factors in propaganda" (which appears in this issue) Dr. Bueb gave an exhaustive account of the development of the synthetic nitrogen industry in Germany. He showed how, during the last few years, the industry has provided farmers all over the world with increasing quantities and new forms of nitrogen at prices lower than the pre-war level, and that in the pursuit of its own objects, the industry has made the interests of agriculture its primary concern. Mr. Speyer, who paid a deserved compliment to his German colleague's work, supplemented his contribution by a number of examples showing the extent to which the lower price for nitrogen had stimulated consumption and had rendered the use of fertilisers possible on crops to which it had hitherto been unprofitable to apply them. In a further paper Professor Hermann Warmbold of Berlin explained the part played by artificial fertilisers in raising the productivity of exhausted soils, which had been cultivated for long periods to a pitch at which a given acreage could provide food for a greatly increased number of persons, thus setting free a continually growing proportion of the population for other activities. This, he recognised, might bring about unforeseen and hitherto unsuspected economic consequences, especially in tropical and sub-tropical countries. Monsieur J. Galland, of Paris, and Mr. T. H. J. Carroll, of London, also took part in the discussion.

The profoundly scientific problem of the creation of new types of plant species capable of responding to maximum dressings of fertilisers was discussed by Professor Ewin Baur of Berlin and Professor H. Nilsson-Ehle of Lund University, Sweden. Both these plant biologists showed that it may now be regarded as axiomatic that it is possible to breed new types of the most important species of cultivated plants which will be capable of absorbing and returning, in the form of increased yield, double the quantity of nitrogen which it is at present customary to apply to them, but that positive results can only be obtained by experimental work extending over a long period of years. In the discussion of these papers Dr. Russel Oakley of Washington, and Dr. J. G. Lipman of New Jersey, took part. Dr. Karl Bosch of Ludwigshaven summed up the whole position by pointing out that the amount of knowledge at present available in regard to the essential factors that must govern propaganda for fertilisers was still extremely small, and that the nitrogen industry must therefore make it its business to provide the necessary material with which to lay a firm foundation for such propaganda by supporting scientific inquiry into these problems.

As regards the British sulphate market, it may be added that the existing price of £13 1s. per ton is to be continued for June, though it is expected that the prices for forward delivery, when they are announced, will be on a lower level.

A New Principle in H_2S Purification

THE elimination of sulphuretted hydrogen from gaseous mixtures by some comparatively simple means is one of the problems which is urgently waiting solution by the chemical engineer. Here, it must be confessed, is an instance where the past few years have at times shown promise of accomplishing much, where the rapid development of chemical technique has seemed capable of surmounting obstacles that previously stood in the way, but where, in spite of suggestions and schemes that bear the mark of practicability, little or no progress on an industrial scale has been registered. It is not, however, for lack of ideas or ingenuity on the part of the chemical engineer, as the principles introduced within the past fifteen years successively by Burkheiser, Feld, Professor Cobb, and Rideal and Taylor conclusively show. Some of these workers undoubtedly have been the victims of their own ingenuity, and have suffered from the fact that on a large working scale complications arise which are not encountered in theory and which would demand the attention of an army of chemists in supervising the running of the plant. The principle involving catalysis and hot purification as first suggested by Rideal and Taylor when associated with the Munitions Inventions Department always appeared to provide the most likely solution, but the industries concerned have been slow to recognise the possibilities of catalytic oxidation with the result that the cumbersome, unwieldy system of low velocity absorption by means of oxides of iron is still in more or less universal use.

In late years in America successful attempts have been made to reduce the labour involved and the size of plant demanded by employing the oxide of iron in the form of a thin sludge, and the latest process, which is by no means without interest, is that introduced by Raffloer who appears to have succeeded in compromising between the ordinary stereotyped dry methods and the newer liquid systems. Raffloer, in fact, claims to have designed a plant in which large volumes of gas may be treated for the removal of sulphuretted hydrogen in comparatively small apparatus demanding far less labour than the customary apparatus, so that low capital charges and high purifying capacity combine to make his scheme the most effective as yet suggested. The principle involved has certainly some novel features, for the oxide of iron is utilised in the powdered form and is distributed in a thick shower throughout the free space of a specially designed purifying chamber. It is unnecessary to describe here the details of construction of the apparatus which is so designed as to permit of the entrance of fresh oxide and the withdrawal of the spent material while the plant is at work, but it should be explained that the " mist " of oxide particles in the purifying chamber is obtained by the aid of a special spraying device which is operated by compressed gas. The purified gas afterwards passes through a bed of oxide in order to filter out any particles which may have become entrained in it during its passage through the spraying chamber.

It is to be noted that the process appears so far to have been tried out on a small scale only, but a purifying unit of large capacity is, apparently, to be put in operation in America during the present year. Needless to say, the results obtained will be followed with a good deal of eagerness in this country, but hopes of a really practical success must not be allowed to run too high. In studying the proposal the mind immediately turns to the difficult problem of the relative concentration of gas and oxide, for in this instance no particular steps seem to have been taken to speed up the velocity of reaction, while in " mist " form the concentration of the oxide would appear to be extremely low. This, of course, is a factor which the inventor must have taken into account; but, speaking with quite a superficial knowledge of his process, we are prompted to compare it with results obtained some short while ago with oxide of iron used as a colloidal solution. In this case the experimenters reported to us that the low concentration of the oxide in a colloidal solution involved the use of such immense quantities of the solution that for industrial scale operations the process would be hopelessly uneconomical and savour of the grotesque.

Prolonging the Coal Crisis

THE deadlock in the coal industry, in spite of many private suggestions for settlement, still continues. The longer the deadlock remains, the greater will be the damage to the coal industry itself and to every other industry, and the longer must necessarily be the period of recovery from its disastrous effects. The miners still refuse to consider any modification of the old terms. The owners not only offer no constructive proposals, either for the immediate settlement of the dispute or for the permanent restoration of the industry, but have almost in so many words told Mr. Baldwin, as representing the nation, to mind his own business. The Government are taking no decisive action, but are apparently waiting on events. It is inconceivable, as Sir Alfred Mond points out, that the nation will much longer tolerate the present situation; for, however much people may be opposed to the theory of nationalisation, the coal industry is a fundamental national interest, and the nation cannot be expected to allow the business of the country to be ruined because the two parties to the dispute maintain an uncompromising attitude to each other. It is obvious that, to change the situation for the better, fresh negotiators will have to take the matter up or the Government will have to intervene.

This is now being recognised in such letters as that of Major David Davies, M.P., himself a wealthy Welsh coalowner, who advocates impartial arbitration as the rational and the national way of tackling the problem. Sir Alfred Mond not only endorses this attitude generally, but adds some weighty considerations of his own. In the main, he points out, discussion has turned on the repeal of the Seven-hours Act, longer hours of working, or a substantial reduction in the present existing wages. Both these solutions would reduce costs, and to that extent facilitate the sale of coal for export and possibly some greater use in the home industry; but when all this is done the basic economic position of the coal industry will be left in an unsatisfactory condition. The same haphazard variation of production and consumption and the relation of one to the other, which is the root

of the present trouble, would remain unchecked. The international struggle for the export markets would continue, and the reduced cost of production would, in itself, not re-establish the quantities necessary to obtain an output from which the greatest economic results could be obtained. The Royal Commission recommend the study of the adoption of co-operative selling, the one factor which would produce stabilisation in the industry. Sir Alfred has repeatedly pointed out that the very large German coal industry has succeeded in achieving this stabilisation for no less a period than thirty years, and this procedure, in price, the development of export trade, or the technical management of collieries, has led to nothing except progress. The solutions of problems of amalgamation and reorganisation have followed automatically, and would do so here. This, combined with the other proposals and in conjunction with a National Wages Board, should restore prosperity and peace to the whole industry.

The Government, Sir Alfred Mond suggests, must come into the picture only to a limited extent. A small temporary subsidy, and, still more important, the assistance of obtaining capital for remodelling the industry, are essential. If the negotiations fail, it is within the power of Parliament, as representing the community, to place on the Statute Book legislation to settle the strike on the following terms: 1. The repeal of the Seven-hour Act; 2. Compulsory co-operative selling; 3. National Wages Board; 4. Small temporary subsidy. These terms would necessitate concessions on both sides, but they are constructive concessions, and would eliminate the undesirable feature of a settlement based solely on the depression of the miners' standard of living, which is the only remedy, apparently, that has ever occurred to the owners.

Chemical Engineering Progress

THE Chemical Engineering Group is once more to be congratulated on a successful year. At the annual meeting it was reported that the membership had increased, that the finances were satisfactory, and that the relations with the Society of Chemical Industry were of the friendliest character. This success is the more noteworthy, as the honorary secretary pointed out, because it is concurrent with the success of the Institution of Chemical Engineers, a newer organisation which it was thought might possibly weaken the Group's position. Experience has shown, however, that neither organisation has suffered from the existence of the other, but that the science of chemical engineering, for the promotion of which both exist, has distinctly gained.

It is a real satisfaction to find that the future of the Chemical Engineering Group is in no danger. The founders took up chemical engineering as a distinct branch of science at a time when many people were inclined to regard it as a fad, and it is owing to their excellent pioneer work that recognition had come so early. The outstanding feature of the Group's activities has been its series of educational conferences. These have introduced a new habit of exchanging views and experiences among practical experts; they have effectively concentrated the best current knowledge on works and process problems of real importance; in details of organisation they have furnished an admirable model. The Group has been carried on with efficiency and enthusiasm, and in the broader and less purely academic educational work which it has done so well in the past it will continue to have a function of real use. Meanwhile the Institution is building up a professional status for chemical engineering and is working to promote a recognised curriculum and standard of scientific qualifications. The progress made in both directions in recent years has been surprisingly rapid and well repays the effort and ability it has involved.

Books Received

FOOD: ITS COMPOSITION AND PREPARATION. By Mary T. Dowd and Jean D. Jameson. New York: John Wiley and Sons, Inc. London: Chapman and Hall, Ltd. Pp. 178. 7s. 6d.

PROBLEMS IN ORGANIC CHEMISTRY. By H. W. Underwood, Jun. New York and London: McGraw-Hill Book Co. Inc. Pp. 234. 10s.

FUELS AND THEIR COMBUSTION. By Robert T. Haslam and Robert P. Russell. New York and London: McGraw-Hill Book Co. Inc. Pp. 810. 37s. 6d.

LIME IN AGRICULTURE. By Frank Ewart Corrie. London: Chapman and Hall, Ltd. Pp. 100. 3s. 6d.

THE LANCASHIRE COALFIELD. THE KING SEAM. Department of Scientific and Industrial Research, Fuel Research, Physical and Chemical Survey of the National Coal Resources No. 6, London: H.M. Stationery Office. Pp. 34. 1s. 6d.

EVAPORATION. By Alfred L. Webre, assisted by Clark S. Robinson. New York: The Chemical Catalog Co., Inc. Pp. 500. $6.00.

THE USE OF SODIUM SILICATE FOR THE SIZING OF PAPER. By Th. E. Blasweiler. Translated by L. W. Codd. London: Constable and Co., Ltd. Pp. 114. 10s. 6d.

INDUSTRIAL STOICHIOMETRY. By Warren K. Lewis and Arthur H. Radasch. London: McGraw-Hill Publishing Co., Ltd. Pp. 174. 12s. 6d.

CORROSION: CAUSES AND PREVENTION. By Dr. Frank N. Speller. London: McGraw-Hill Publishing Co., Ltd. Pp. 622. 30s.

The Calendar

June 7	Institute of Physics: "The Relationship of Physics to Aeronautical Research." H. E. Wimperis. 5.30 p.m.	Physics Lecture Theatre, Royal College of Science, South Kensington, London.
7-12	Photographic Convention of the United Kingdom: 38th Annual Meeting.	Edinburgh.
10	Royal Institution of Great Britain: (I) Iron in Antiquity; (II) Science in Antiquity. Dr. J. Newton Friend. 5.15 p.m.	21, Albemarle Street, Piccadilly, London.
10	Optical Society: Ordinary Meeting. 7.30 p.m.	Imperial College of Science and Technology, South Kensington.
11-18	International Oil, Chemical and Colour Trades Exhibition.	Royal Agricultural Hall, London.
14	Faraday Society: General Discussion on "Explosive Reactions in Gaseous Media." 2.30 p.m.	Institution of Mechanical Engineers, Storey's Gate, Westminster, London.
17	Chemical Society: Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, London.
22	National Physical Laboratory: Annual Visit of Inspection. 3 to 6 p.m.	Teddington.
July 19	Institution of Chemical Engineers: Fourth Annual Corporate Meeting.	Committee Room D, Central Hall, Westminster, London.
19	Institution of Chemical Engineers: Annual Dinner. 6.30 for 7 p.m.	Great Central Hotel, London.
Sept 20-24	Chemists' Exhibition.	St. Andrew's Hall, Glasgow.

Prices and New Forms of Nitrogen Fertilisers.—(1)

German and British Views at the Biarritz Conference

We have pleasure in publishing the substance of the papers on "The Determination of Price and Creation of New Forms of Nitrogen Fertilisers as Factors in Propaganda," read by Dr. J. Bueb, of the Stickstoff-Syndikat, Berlin, and Mr. F. C. O. Speyer, B.A. (Oxon), general manager of the British Sulphate of Ammonia Federation, at the International Propaganda Meeting held at Biarritz on April 27. The conclusion of Mr. Speyer's statement, with statistical tables, will be published in our next issue.

I.—By Dr. J. Bueb

THE German synthetic nitrogen industry has from the very beginning made agriculture itself the centre of its propaganda efforts. The first step was to show farmers the effect of nitrogen in promoting growth by means of a series of ocular demonstrations on a practical scale carried out throughout the length and breadth of the country. Having drawn farmers' attention to nitrogen by this preliminary propaganda, we proceeded by means of accurate manurial trials to determine the increase in the yield of agricultural products of every kind which was obtainable by using nitrogen, and at the same time to show the economical result of such use. We also demonstrated on a number of model farms, lavishly equipped, the maximum profit which a farmstead could be made to yield by utilising the most modern scientific experience in regard to fertilising, methods of cultivation and selection of seed. The aftermath of the war in Germany was a time specially suited for furthering nitrogen propaganda.

Necessity the best Propagandist

The shortage of food in Germany after the war and the impossibility of supplying the deficiency from abroad owing to the progressive decline in the value of German money, brought about a situation in which all agricultural products found a ready market.

Prices for nitrogen were under Government control up to 1923 and attained a record low level, while agricultural products remained relatively high in price. Farmers, therefore, had a strong incentive to raise the productivity of the land by increased application of nitrogen. The result was that up to 1923 the consumption of nitrogen in Germany rose more rapidly than the production. During the fertiliser year 1924/25 the total sales of nitrogen for agricultural purposes in Germany amounted to 335,000 tons of pure nitrogen. This fertiliser year was noteworthy both on account of the restoration in Germany of stable currency based on gold, which made it possible once more to obtain normal prices for nitrogen, and also on account of the abnormally high prices ruling for cereals, which created a favourable economic relation between the cost of the raw materials for agricultural production, such as nitrogen fertilisers, and the value of the produce itself.

The following table shows the relation between the average cost of nitrogen and the average price for cereals, and the profit which it was possible to make in Germany by using nitrogen :—

Fertiliser year.	Deliveries of nitrogen for agriculture in Germany in tons of pure nitrogen.	Price in goldmarks for 1 kg. N in ammonium sulphate delivered free to consumer.	Price in goldmarks (for 1 ton of cereals*) ex farm.	Profit† from capital laid out in fertiliser.
1913/14	185,000	1·32	166·32	152%
1921/22	290,000	0·61	157·67	417%
1922/23	280,000	0·74	153·14	314%
1923/24	240,000	1·03	144·99	182%
1924/25	335,000	1·10	207·37	277%
1925/26	—	1·04	202·20	289%

In 1923 the production of synthetic nitrogen in Germany overtook and surpassed home consumption so that from that year onwards Germany joined the ranks of nitrogen-exporting countries. It is true that a certain quantity of nitrogen was exported from Germany prior to 1923, but this exportation was involuntary, and the result of the conditions of the Peace of Versailles and of the circumstances connected with the occupation of the Ruhr.

German Sulphate for Export

During the fertiliser year 1926/27 the production of primary nitrogen in Germany will attain a level of about 600,000 tons of pure nitrogen, of which approximately 90 per cent. will be synthetic nitrogen.

* Average for wheat, rye, barley and oats.

† Assuming a yield of 20 kg. grain from 1 kg. nitrogen.

By the end of 1923 we had arrived at a stage at which it was necessary in order to find an outlet for our surplus production to commence propaganda for synthetic nitrogen in other European and overseas countries. For this purpose we were able to make use of the experience gained in Germany. It was clear to us that we were only likely to succeed in introducing into other countries those forms of nitrogen fertilisers which had already been used for agricultural purposes in them. We, therefore, began by limiting propaganda and export to ammonium sulphate.

The immediate result of the appearance on the world market of the German exportable surplus of ammonium sulphate in 1923 was a reduction in the abnormally high price for this fertiliser then ruling. The price fell from £17 to about £15 per ton of 1,016 kgs. This tendency towards a lower level of price continued to manifest itself as the German export tonnage grew.

For the fertiliser season 1925/26 a graduated scale of prices was introduced by agreement with the largest exporters of ammonium sulphate, the object being to increase summer deliveries. Summer prices started at a little over £12 per ton and rose by about £1 during the year. We were completely successful in securing the desired increase in summer outlet as a result of the introduction of the scale.

The graph on p. 495 shows the progress of prices in the world market for ammonium sulphate.

This policy in regard to prices brought about the desired increase in consumption which, on the whole, was not obtained at the expense of Chile nitrate. For the annual consumption of the latter has remained about the same. We may say, however, that the normal expansion in the world's consumption of nitrogen for agricultural purposes was secured by the makers of synthetic ammoniacal nitrogen.

The following table shows the quantities of German synthetic nitrogen exported in the "fertiliser years" :

1923/24	28,000	tons pure nitrogen.
1924/25	52,000	" " "
1925/26 .....about	135,000	" " "

Nevertheless, the outlet for ammonium sulphate cannot be increased to an indefinite extent, not even by low prices. If it is certain that ammoniacal nitrogen has a field all over the world (e.g. for irrigated land and for specific crops such as potatoes, rice, etc.) in which it is preferable to nitric nitrogen, yet it is also true that for certain lands and crops nitric nitrogen is decidedly superior to ammoniacal nitrogen, especially for sugar-beet and plants with a short period of vegetation, and above all in hot and dry climates.

The recognition that ammoniacal nitrogen could not in all cases completely fulfil the functions of nitric nitrogen led as early as 1919/20 to the creation of new forms in which part of the nitrogen was present in nitric form. These forms were destined in the first place for German consumption. Ammonium nitrate, the combination of ammonia and nitric acid, although known to have an ideal effect as a fertiliser, was rejected because its hygroscopic and explosive properties forbade its use in agriculture.

Double Salts

Proceeding from ammonium nitrate, however, we succeeded in producing two nitrogen fertilisers which have approximately the same effect as ammonium nitrate without possessing its unpleasant characteristics. These are : Potash-ammonium-nitrate BASF and Leunasalpeter BASF (ammonium-sulphate-nitrate). These new nitrogen fertilisers are double salts, and are about equally as effective as Chile nitrate, and more economical to use, if the nitric nitrogen in them is put in at the same price as the ammoniacal nitrogen. Intensive propaganda work in favour of these two new combined ammonium nitrate fertilisers has only been done in Germany, where a very large demand has been created for them.

Cyanamide (*Lime nitrogen or Nitrolim*).—The production of cyanamide, which is also manufactured synthetically, increased very markedly in Germany during the war and after. Cyanamide took deeper root in the affections of farmers in Germany than elsewhere because the unit of nitrogen in cyanamide was sold at 10 per cent. less than the unit of nitrogen in ammonium sulphate, and also because its lime content provided a strong incentive to use it on German soils, which are notoriously deficient in lime—a condition which was aggravated during the war.

Urea BASF.—The problem of the economic production of urea on a commercial scale was solved in 1924. In urea we had created an entirely new nitrogen fertiliser, the application of which is destined to be extremely successful with special crops such as tobacco, hops, vines, in the garden, and also on meadow and pasture land. Its high content of nitrogen, 46 per cent., will secure a certain outlet for urea by reason of the economy in freight alone.

Calcium Nitrate BASF.—A good many years ago the use of Norgesalpeter containing 13 per cent. nitrogen was successfully introduced into agriculture. This is a synthetically produced form of calcium nitrate from Norway, with a relatively low nitrogen content. It was, therefore, not surprising that when, about six months ago, the German synthetic nitrogen industry appeared on the market with a white, broad-castable calcium nitrate containing 15·5 per cent. of nitrogen, this product found ready acceptance and recognition in agriculture all over the world.

A form of nitrate possessing the same nitrogen content as Chile nitrate, but combined with a soil-improver like calcium instead of with sodium, which is of no value in the soil and indeed to some extent harmful, is clearly destined to become a successful agricultural fertiliser.

Ammonium Phosphate Fertilisers

(*a*) *Diammonphos BASF.*—Our newest nitrogen fertiliser diammonphos is pure diammonium phosphate [$(NH_4)_2$ HPO_4] with a content of 19 per cent. nitrogen and 47 per cent. phosphoric acid. Its phosphoric acid is in soluble form and easily taken up by the plant. Unlike superphosphate and basic slag this new fertiliser contains only plant foods, without any filler, and it is therefore expected to prove specially useful in those countries in which a high percentage of phosphoric acid is still required in comparison with nitrogen, and for plants like cotton, which are gross consumers of phosphoric acid.

(*b*) *Leunaphos BASF.*—By mixing diammonphos with ammonium sulphate we get another new fertiliser called Leunaphos containing 20 per cent. nitrogen and 15 per cent. phosphoric acid. Leunaphos has been produced specially with a view to German conditions, as the most modern agricultural practice in Germany calls for a fertiliser with a relation of 1 unit of nitrogen to 0·75 phosphoric acid.

A calculation of the profit, to be obtained with prices for nitrogen and agricultural products in Europe as they are to-day, shows that money invested by farmers in nitrogen will yield from 100–400 per cent. interest according to the crop grown, provided synthetic nitrogen is scientifically used. The following is a picture of the conditions in Germany.

As a result of numerous manurial trials, the average yield from 1 kg. of nitrogen has been determined as 20 kg. grain plus 30 kg. straw, or 100 kg. potatoes or 150 kg. sugar-beet plus 100 kg. beet tops, or 250 kg. roots plus 75 kg. tops, or 45 kg. hay.

Hence at to-day's prices in Germany, by spending Mk. 1·10 for 1 kg. of nitrogen in ammonium sulphate you receive a return of about Mk. 4·90 for wheat, 3·80 for cereals (average of wheat, rye, oats and barley), 3·10 to 6, for potatoes, 5·70 for sugar-beets, 2·80 for hay.

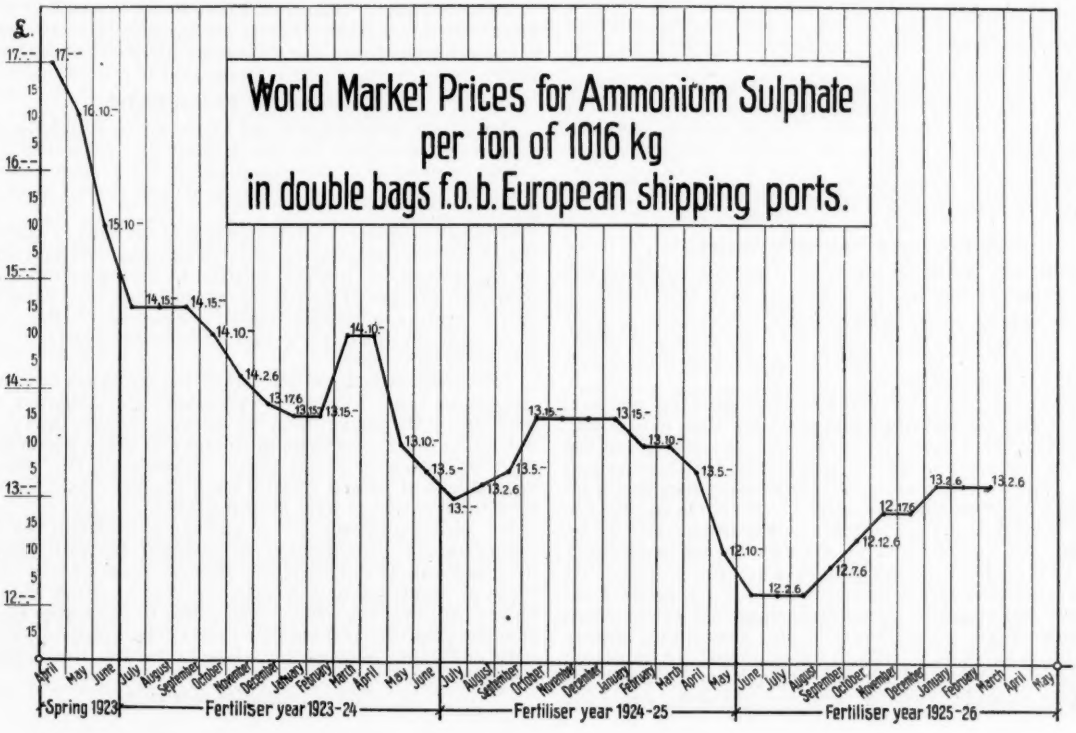
This means that the outlay on nitrogen brings in interest at the rate of about 345 per cent. for wheat, 245 per cent. for the average of the four cereals, 182–445 per cent. for potatoes, 418 per cent. for sugar-beet, and 155 per cent. for hay.

United States Conditions

Conditions in the United States are materially different Owing to the policy of the tariff the high inland freight on the raw materials and finished products of agricultural production, and the excessive use of phosphoric acid, the profit to be derived from nitrogen fertilisers in the U.S. is notably lower than in Germany and Europe.

The increase in the yield of agricultural products is essentially obtained from the nitrogen applied, provided that at least enough phosphoric acid and potash is present to enable the nitrogen to produce its full effect.

Yields cannot be materially increased by excessive applications of phosphoric acid, and for this reason American farmers who are buying the type of mixed fertiliser current in that country, consisting of 1 unit of nitrogen, 4 units of phosphoric acid and 1 unit of potash, are paying away money unnecessarily



for phosphoric acid. It does not pay to use a fertiliser of this type to-day on cereals in America in view of the present prices for cereals there.

If conditions in America permitted the use of an equal quantity of nitrogen and the same proportion of nitrogen to phosphoric acid as is customary in European countries, the application of artificial fertilisers to cereals in the United States would be profitable.

Speaking generally, it is safe to say that provided the right policy is adopted in regard to prices and provided the particular form of nitrogen most suitable to each individual crop is selected, the best results from propaganda will be obtained in countries the soil of which has already attained a high state of cultivation.

It follows necessarily from this proposition, that in overseas countries a beginning should be made on the plantations and not on lands cultivated by natives.

Leunaphoska BASF.—The remarks in the last paragraph will make many of us turn our thoughts almost involuntarily to the largest and oldest civilisation in the world, namely, China. There you have a soil free from weeds, which has been in cultivation for a thousand years, and is simply crying out for artificial fertilisers. As it will not be possible within measurable time to obtain such detailed knowledge of Chinese soils that we can recommend special kinds of fertilisers for individual cultivated areas and types of crop, it will be necessary in the first instance to produce a " normal " fertiliser suitable for Chinese soils generally. We have created this fertiliser in Leunaphoska, containing 13 per cent. nitrogen, 10 per cent. phosphoric acid and 13 per cent. potash. These plant foods are thus in the relation of 1 unit of nitrogen : 0·75 phosphoric acid : 1 potash. The application of this new fertiliser will secure full results from its nitrogen content because the nitrogen in it is reinforced by potash and phosphoric acid.

II.—By Mr. F. C. O. Speyer

The paper by Dr. Bueb, to which we have just listened with such pleasure, is, I think, the most impressive statement which has been published in regard to the nitrogen problem since the memorable prophecy made by Sir William Crookes over a quarter of a century ago. The facts set out by Dr. Bueb are at one and the same time the justification of Crookes's fears and the realisation of his hopes; their recital in this paper—a model of brevity and lucidity—has a twofold significance for us, for it tells us not only what has been achieved by the Stickstoff-Syndikat, the largest producers of nitrogen in the world, but also the policy and method underlying what they have accomplished.

As to the achievement itself—the solution of the problem of making atmospheric nitrogen available for agriculture and industry—I believe that this will rank in history as one of the great milestones in the progress of human endeavour, and that the names of those responsible for it—one of whom we are pleased and honoured to have amongst us to-day in Dr. Bosch—will be remembered with gratitude by mankind.

Low Price and Adaptable Variety

As regards the means by which the Stickstoff-Syndikat has brought home to the world in general and to farmers in particular, the potential wealth which lies in each kilo. of nitrogen, I think we shall all agree that a low price and adaptable variety of form are the two most potent instruments of propaganda which we possess.

It is often said that the actual level of price for nitrogen has little effect on consumption, provided that it is firmly maintained and that there is a reasonable expectation that the increase in the yield of the crop will pay for the nitrogen applied. This I believe to be a fallacy whether regarded from a psychological or an economic point of view. On the psychological side there is much ignorance and prejudice still to be overcome. An apophthegm of a great French writer not inaptly, I think, describes the spirit in which the propagandist is, all too recurrently, met by the farmer: " La question est de savoir si, après tout, les insanités consacrées par le temps ne constituent pas le placement le plus sage qu'un homme puisse faire de sa bêtise." Which I may prosaically translate: " What was good enough for my father is good enough for me." This attitude is encouraged, perhaps some would say justified, by the inability of agricultural science at present to give a definite answer to a specific question.

There are thousands of chemists who could, to-day and in front of us, make an exhaustive analysis of any soil we put before them, and tell us exactly in what plant foods it was deficient. And yet not one of those chemists could honestly give a guarantee to the farmer of the land represented by that sod, that if he supplied the deficiency he could with certainty rely upon getting the desired increase in crop. The honest chemist would say: " Such and such plant foods are present in this soil, but I cannot tell you if they are available to the crop. If they are present in sufficient quantity and the conditions of climate and rainfall are satisfactory, you may get a favourable result, but on the other hand you may not." In order to induce the farmer to put the matter to the at-present indispensable test of practical experiment, there must be offered to him the widest possible margin between the maximum gain he can hope to obtain in yield and the maximum loss he must expect in outlay if the experiment fails. Moreover, as Dr. Bueb has pointed out, the only argument which the propagandist can use validly and effectively with the farmer is the economic one: " It pays."

The Chemist and the Farmer's Needs

We are to hear later to-day what steps agricultural chemists are taking to make it possible for them to answer the farmer's doubts and questions with less ambiguity. The progress along the path from ambiguity to certainty will be the measure of the reduction possible in the margin for failure to be allowed in the price. Until agricultural chemists have solved their fundamental problems, nitrogen producers will have to bear the brunt of the sacrifice in price now rendered imperative by their ignorance.

In pursuing this line of thought I have become involved in the exposition of that part of the economic argument, which may be summarised thus: The price for nitrogen (and other fertilisers) must be sufficiently low to allow the farmer an ample margin for failure, partial or total. This may be called the relative economic argument: but there is also an absolute consideration, namely, the fact that to-day's level of price for nitrogen is too high to enable it to be profitably used on all but a small proportion of the world's crops. It is true that the crops which generally show a profitable return for nitrogen at present prices are the great staple crops, the cereals, sugar-beet and roots, potatoes, cotton, tea and rubber, though even in the case of some of these it does not pay to use nitrogen in certain countries. But in addition to these staples of commerce there is a wide range of crops, including most of the grassland in the world, the millets and the fodder crops, which might be consumers of fixed nitrogen if the price were lower.

Scope for the Propagandist

Here, then, provided soil and climate are suitable for crops capable of absorbing increased quantities of nitrogen, lies a land of promise stretched out before the propagandist, the entry into which is by the straight and narrow path of a lower price.

It may, therefore, be laid down with confidence that each successive reduction in the price of nitrogen will be followed by an increase in demand, relative in regard to those crops to which nitrogen is now being applied to some, though not to the maximum possible extent; absolute, in the case of those crops on which it is unprofitable to apply nitrogen at the present level of price.

This progress will continue until the scientists of a future generation have succeeded in making the essential foods required by the human body by direct synthesis, thus cutting out the long series of links in the present chain which begins with the plant seed and passes through all the stages of vegetable and animal growth until the essential conditions for human existence have been provided.

Dr. Bueb's proposition that you can only obtain the maximum possible consumption of nitrogen by providing the necessary variety of forms of nitrogen, suitable for the different types of plant, soil and climate, is incontrovertible and now, indeed, self-evident. But I would like to emphasise the fact that the credit for making this a self-evident proposition to us here and now, belongs very largely to Dr. Bueb and his colleague, Dr. Bosch.

[*To be concluded next week*]

Chemical Engineering Group

Annual General Meeting

THE Chemical Engineering Group of the Society of Chemical Industry held its seventh annual general meeting at Abbey House, Westminster, on Friday, May 28. Mr. F. H. Rogers (the newly elected chairman) presided, in the absence of Mr. C. S. Garland (the retiring chairman). Originally the meeting was fixed for May 7, and it was arranged that it should be followed by an informal dinner, but the arrangements were cancelled as the result of the general strike.

Record of Continued Progress

The report of the Group Committee for the year ended December 31, which was presented by Mr. H. Talbot (hon. secretary), recorded that the work carried on by the Group during the year had been increasingly interesting and successful. Besides an access to the membership, the number of meetings held, both by the Group itself and jointly with other Sections of the Society and other London bodies, had been much larger than in the preceding year, whilst the variety of subjects treated and the success attending the meetings had been notably augmented. The Committee regretted to have to report the resignation of Sir Frederic Nathan from their number, but were pleased to record the addition to the committee of Mr. E. A. Alliott, as representing the Nottingham Section of the Society.

The figures as to membership reflected continued progress. The figure of 401, for 1921, dropped to 315 in 1922, but since that time there has been a steady increase, the membership at the end of 1925 amounting to 429. This increase was regarded as satisfactory, representing as it did a distinct increase in the membership not only of the Group but also of the parent Society.

The discussions inaugurated during the annual general meeting of the Society of Chemical Industry, in Leeds, in July, 1925, on the subject of solid smokeless fuel, which led to the conference in Sheffield on November 20, resulted ultimately in the establishment of the Fuel Committee of the Society, which it was hoped would be in full working order in the near future.

The financial results of the year's working, which showed a small credit balance, demonstrated in a striking way the progress the Group was making and continued to make. It was some satisfaction to note that the Group had never been stronger than at present, after one or two years' working of the Institution of Chemical Engineers, which organisation was at one time considered by some members of the Group to foreshadow the speedy demise of the Group organisation.

The Data Sheet Sub-Committee had been unable to issue any further data sheets during the year under review, but work was in progress in various directions, which it was hoped would come to fruition in the year 1926.

Finance

The accounts of the Group, which were submitted for approval by Mr. F. H. Rogers (who is retiring from the post of hon. treasurer, in view of his election as chairman of the Group), showed that the excess of income over expenditure for the year was £34 2s. 7d., after making a reserve of £160 in respect of the printing of the *Proceedings* for 1925. It was pointed out that up to the end of last year there was an outstanding sum of £131 17s. 6d. This amount was really due from the printing grant of the parent Society in respect of 1924, but was held over pending a settlement with a committee of the parent Society appointed to consider a question that arose in the Society's recommendations. An amicable settlement was arrived at, and the 1925 accounts included a subscription of £150 from the Society in respect of printing for the year 1924, as well as a figure of £121 10s. 5d. in respect of revenue from advertisements in the *Proceedings*. There were two other grants of £150 each from the parent Society, one a general grant and the other a printing grant for the year 1925.

It was probable, said Mr. Rogers, that the increased membership of the Group was due in some measure to the sending out of the Group's accounts by the parent Society simultaneously with their own notices regarding subscriptions. This arrangement had worked extremely well, and undoubtedly had been to the benefit of the Group, at the same time relieving the treasurer and the secretary of the Group of a great deal of detail work.

Friendly Relations with the Society

The motion for the adoption of the balance sheet and accounts was seconded by Mr. W. J. U. Woolcock (President of the Society), who said that his reason for wishing to second it was to make an explanation with regard to the financial statement. Mr. Rogers, he said, had very handsomely acknowledged the way in which the parent Society had met the Group. It was the desire of the Society always to meet any of the groups in the way in which it had met the Chemical Engineering Group. It had put the finances of the Group on a proper footing, but had done so at the expense of a deficit in the Society's accounts this year. The Society, however, was absolutely right in that, because it derived its strength from the various groups, whether they were subject groups, such as chemical engineering, or a fuel section, or any of the local sections. He would not be ashamed to go to the annual meeting of the Society with a deficit, because it had put the Society and the groups in a proper position, and, therefore, at the annual meeting of the Society he would claim the support of the Group. He believed it was sound finance, and, rather than make any profit or anything of that kind on the year's working, he would prefer to see a small deficit in the Society's accounts and know that the groups were in the perfectly healthy condition they were in at the present time. After all, the Society had to perform a duty to its members.

Mr. Rogers acknowledged again the courtesy the Society had extended to the Group, and said that the Group's demands were met in full, although the Society's stocking was getting rather low.

Officers for the Year

The following were elected to fill vacancies on the Group Committee: Mr. H. Broadbent, Mr. G. Gray, Dr. W. P. Joshua, and Dr. W. R. Ormandy.

The other officers elected were: Chairman, Mr. F. H. Rogers; hon. treasurer, Mr. H. J. Pooley; hon. secretary, Mr. H. Talbot.

At the conclusion of the meeting, votes of thanks were accorded the officers and committee for their work during the past year.

Society of Chemical Industry

A London Meeting Fund

IN preparation for the annual general meeting of the Society of Chemical Industry and the Congress of Chemists to be held in London July 19 to 23, an appeal for donations has been issued by Dr. J. P. Longstaff, the general secretary. The first list of subscriptions includes the following:—

Society of Chemical Industry, £150; Burmah Oil Co., Ltd., £100; Howards and Sons, Ltd., £100; Gas Light and Coke Co., £52 10s.; South Metropolitan Gas Co., £52 10s.; Brunner, Mond and Co., Ltd., £50; Lever Bros., Ltd., £50; Mond Nickel Co., Ltd., £50; United Alkali Co., Ltd., £50; Anglo Persian Oil Co., Ltd., £25; A. Boake Roberts and Co., Ltd., £21; British Drug Houses, Ltd., £21; Woodall-Duckham Co., Ltd., £21; Victor Blagden and Co., Ltd., £10 10s.; Borax Consolidated, £10 10s.; W. J. Bush and Co., Ltd., £10 10s.; Dr. Bernard Dyer, £10 10s.; W. J. Fraser and Co., Ltd., £10 10s.; Hadfields, Ltd., £10 10s.; E. Grant Hooper, £10 10s.; Kestner Evaporator and Engineering Co., Ltd., £10 10s.; Locke-Lancaster and Johnson and Sons, Ltd., £10 10s.; T. Hill-Jones, Ltd., £10 10s.; W. J. U. Woolcock, £10 10s.; S. Martineau, £10; A. G. Bloxam, £5 5s.; A. Chaston Chapman, £5 5s.; A. Gallenkamp and Co., Ltd., £5 5s.; H. J. Garnett, £4 4s.; John Greenaway, £3 3s.; William G. Wagner, £3 3s.; R. B. Brown and Co., Ltd., £2 2s.; Dr. R. C. Farmer, £2 2s.; Dr. Fletcher, £2 2s.; F. W. Harbord, £2 2s.; W. Jago, £1 1s.; Hugh W. James, £1 1s.; Thos. Macara, £1 1s.; C. H. Gonville, 10s. 6d.

Polish Chemist as President

M. IGNATIUS MOSCICKI, a professor of chemistry and an engineer, has been elected President of Poland after a second ballot. He was nominated by Marshal Pilsudski.

Oil and Colour Chemists

The Work of the Past Year

THE annual general meeting of the Oil and Colour Chemists' Association was held at the Institute of Chemistry, London, on Friday, May 28. The meeting was originally fixed for May 13, but was postponed as the result of the General Strike.

Dr. H. Houlston Morgan (the retiring president), in the absence of the hon. treasurer, who was absent through illness, presented the accounts. The total receipts for the year (January to December, 1925) were £455 16s. 9d., and the expenditure £445 4s. 11d., leaving a balance in hand of £10 11s. 10d. The balance sheet showed excess of assets over liabilities amounting to £104 18s. 8d.

Annual Report

The report of the Council, which covered the period from May, 1925, to May, 1926, showed an increase of 24 ordinary members and 43 associate members, and the total number of members on May 1, 1926, was 347, consisting of 99 associate and 248 ordinary members. The importance of increasing the membership was strongly urged.

In reference to the retiring president (Dr. H. Houlston Morgan), the Council placed on record its high appreciation of the very valuable services he had given to the Association so unstintingly, not only during his period of office as president for two years, but since the inception of the Association eight years ago. The progress made during the last two years was due in a large measure to the unremitting attention which he had given to the affairs of the Association, and he could with a sense of keen satisfaction look over his intimate connection with the Association and feel that his efforts had been attended with such a large measure of success. The Council unanimously recommended the appointment of Dr. Morgan as a vice-president, as some slight recognition of his work. It was also their unanimous decision to nominate Mr. C. A. Klein as his successor. In July last the Association suffered a severe loss by the death of Mr. W. J. Palmer, one of its vice-presidents. The Council elected Mr. J. Russell Thornbery to fill the vacancy.

Mr. J. Newton Friend, Mr. C. A. Klein, Mr. S. K. Thornley and Mr. Selby Wood retired from office as vice-presidents, and the Council nominated Professor T. M. Lowry, F.R.S., Dr. H. Houlston Morgan, Mr. T. M. Tyson, and Mr. A. Selby Wood to fill the vacancies. Three vacancies on the Council were created by the retirement of Messrs. Clayton, Lowry and Tyson. Special thanks were accorded Mr. J. B. Shaw and Mr. H. Clayton, the chairman and hon. secretary of the Manchester Section, Mr. Clifford, the hon. secretary and treasurer, Mr. J. A. Frome Wilkinson, honorary editor, and others.

With regard to specifications and standardised tests, the panels of the British Engineering Standards Association appointed for the drawing up of British Standard Specifications for pigments, paints and varnishes, had continued their meetings, and two specifications, viz., dry white lead and white lead paste, had been issued, whilst others dealing with white spirit, turpentine, raw linseed oil, refined linseed oil, boiled linseed oil, zinc oxide, zinc oxide paste, red lead, barytes, asbestine, white lead ready mixed paint, zinc oxide ready mixed paint, tinted white lead and zinc oxide paints and three types of varnishes would be published shortly. In addition sub-panels had been appointed to deal with colour standardisation, British oxides of iron, and general paint research.

The Association had been admitted to membership of the Federal Council of Pure and Applied Chemistry, and Dr. H. Houlston Morgan had been appointed its representative on that body. One of the tasks of that Council was to consider the Chemistry House scheme. There was to be a general discussion on that proposition at the Congress of Chemists to be held in London in July. The Société de Chimie Industrielle de France had invited the Association to send a representative to its sixth annual congress, to be held at Brussels on September 26, 1926, and the Association hopes to be represented there. An invitation had also been received to attend the centenary celebrations of Marcelin Berthelot in Paris in October, 1927. The Association had accepted an invitation to co-operate in connection with the Congress of British Chemists to be held in London July 19 to 23. Arrangements were being made for a joint discussion between the Association and the Institution of the Rubber Industry, on the influence of particle size in the paint and rubber industries. Sir William Bragg would preside, and the discussion was to be opened by Dr. Twiss, on behalf of the Institution of the Rubber Industry, and Mr. C. A. Klein, on behalf of the Oil and Colour Chemists' Association. On Friday, July 23, there was to be a joint meeting of the Association and the Institution of Chemical Engineers on oil extraction by solvents. A trip along the Thames has been arranged for the afternnon, a halt being made to inspect a new type of plant recently patented for extracting oil by solvents.

Mr. A. S. Jennings proposed the adoption of the report and accounts, which, he said, appeared to be most satisfactory. He congratulated Dr. Morgan and the Association upon the success which had attended their efforts during the past two years. The mere fact that there had been such a large increase of membership proved that the activities of the Association were appreciated.

Mr. J. Parrish seconded, and the report and accounts were adopted.

Officers and Members of Council

The following were elected to fill the posts indicated :— President, Mr. C. A. Klein ; vice-presidents, Messrs. T. M. Lowry, H. Houlston Morgan, T. M. Tyson, and A. Selby Wood ; Associate Member on Council, Mr. W. H. Screeton ; Ordinary Members on Council, Messrs. W. G. Aston and J. J. Fox.

The Retiring President

Mr. C. A. Klein, after thanking the members for electing him president, proposed a vote of thanks to Dr. Morgan for his services. He repeated the Council's expression of thanks, and said that it reflected not only the feeling of the Council but of the members as a whole.

Mr. J. A. Frome Wilkinson, who seconded, said that perhaps few of the members realised what a tremendous amount of work Dr. Morgan had put into the affairs of the Association. The progress the Association had made during the past two years had been principally due to Dr. Morgan's efforts.

The vote of thanks was carried with enthusiasm.

Dr. Morgan, responding, thanked all the members of the Association for their very hearty co-operation during his presidency. On the whole the Association had not done badly. Thanks were due to all members, because it was the support by the members of the policy of the Council that made for the progress of the Association. In a tribute to Mr. Klein for his unsparing efforts he said that rarely, if ever, had it been possible to choose a president with such a degree of unanimity, not only among the members of the Council, but among the members of the Association as a whole.

Exhibits of Apparatus

In connection with the annual meeting there were a few exhibits of apparatus.

Dr. H. Houlston Morgan showed a Doolittle Viscometer which was being used for the determination of the viscosity of a black japan. This instrument is well known in America but is little used in this country. Whilst not of high scientific accuracy, it gives readings which are accurate enough for works' control. It is more accurate than the usual works' method, viz., the "bubble"-tube method, and it has the advantage that it can be used for black japans, where the bubble-tube method cannot. The instrument is strong, contains no breakable parts, and is not easily damaged. A determination can be made in five minutes and the apparatus cleaned out ready for another determination. It is almost in continuous use, daily, at Dr. Morgan's laboratory for control of factory products.

W. Watson and Sons, Ltd., exhibited twelve microscopes of various types and these were utilised by Mr. Klein for the display of specimens. The magnification at which the objects were exhibited were 150 diameters, plain transmitted light being employed in nine cases and dark ground illumination for the other three. The instruments on which specimens were exhibited by plain transmitted light were of the usual laboratory type suitable for any form of work, known as the "Service" model and used in laboratories throughout the world, the special point of design being that any refinements can be added by the user as required. The other three instruments were of more advanced research type, such as are advocated for various forms of dark ground illumination and

for photomicrography. The dark ground method of illumination is of particular interest inasmuch as it reveals structure which normally is not visible with the usual microscopic examination by transmitted light.

Testing Instruments

An easily assembled plastometer for testing ready mixed paints and enamels was exhibited by Mr. A. de Waele. The apparatus, which is assembled entirely from readily available parts, is in no way different in principle to that described by Mr. A. de Waele in 1923. Its use is, however, restricted to the examination of systems possessing little static rigidity ("yield value"), and is unsuited to the examination of, for example, stiff paste paints, etc. The apparatus consists of a foot-pump as the source of air pressure, a stoneware bottle fitted with a rubber stopper, Dunlop valve and a three-way outlet tube with stopcock adapted to function as a relief cock, this part of the installation being also connected to a mercury manometer. The plastometer and receiver consist of two small aspirator bottles connected together by a horizontally disposed capillary tube, thus minimising the variation in hydrostatic head correction during the course of a determination. The exit end of the receiver leads to the flowmeter device—a manometer and air leak disposed in parallel. The essential parts may, if desired, be immersed in a thermostat bath. Specimens exhibiting extreme limits of the four factors derivable by the plastometer were also exhibited, in particular the phenomena of "livering" and "shortness" in paints.

Michell Bearings, Ltd., exhibited the Michell viscometer which is a simple instrument for testing the viscosity of oils, varnishes and other fluids. The instrument consists of a cup of steel or cast iron having a perfect concave surface, and is provided with a hollow stem or handle, which forms a thermometer pocket extending into the metal of the cup. The surface of the cup has three minute projections which prevent the steel ball from making complete contact and regulate the thickness of the film of fluid under test. In order to protect the concave surface from injury and to accommodate a surplus of the fluid, the cup is slightly recessed all round its edge. Viscosity is measured by taking the time required for the ball to fall from the inverted cup. The action may be briefly explained as follows:—When its support is removed the ball, being acted upon by gravity, is drawn downwards. The film, which is of fixed initial thickness, thereby becomes the subject to tension; and, following the law of fluids, it draws the fluid from the circumferential gallery, which is its only source of supply, towards the centre of the cup. The inward rate of flow of the fluid increases the film thickness until the ball falls away, and the rate at which this inward flow takes place is an inverse measure of the viscosity of the fluid.

Mr. D. B. Porritt, the Director of the Research Association of British Rubber and Tyre Manufacturers, exhibited a filtering method for removing silt and impurities from pigments and Mr. C. A. Klein showed an elutriator.

Chemical Merchant's Affairs

At a recent meeting of the creditors of Thomas Henry Mallagh, trading as Mallagh and Co., 32, Great Dover Street, London, chemical merchant, a statement of affairs disclosed liabilities £6,026 11s. 8d. and a deficiency of £5,978 8s. 2d. The solicitor to the debtor stated that included in the unsecured creditors was an amount of £3,500 due to relatives of the debtor in respect of moneys advanced. The total creditors who had assented to a deed of assignment executed in favour of Mr. W. P. de la Haye represented £4,097 and the claims of the loan creditors would be withdrawn if the remainder assented to the deed of assignment. The debtor commenced business many years ago, and in 1917 he joined the army. On his return in 1920 he found that he was faced with heavy liabilities. It was eventually resolved that the deed of assignment already executed in favour of Mr. de la Haye should be confirmed.

Organic Syntheses

The Editors of *Organic Syntheses*, an annual publication of satisfactory methods for the preparation of organic chemicals, now have at hand a large number of preparations in addition to those to be included in Volume VI, which is now in the press, or Volume VII, which will soon go to the printer. Chemists interested in any of these preparations can obtain copies from Professor F. C. Whitmore, Northwestern University, Evanston, Illinois, U.S.A.

The First I.G. Annual Report

Results for 1925

The first annual report of the amalgamated chemical companies which were combined last autumn under the title of the I.G. Farben-Industrie A.-G. of Frankfort-on-Main, was issued on May 19th. The fusion of the six companies now absorbed in the I.G. was carried out by the Badische Company increasing its ordinary share capital from 176,000,000 marks to 641,600,000 marks and its preference capital from 1,200,000 marks to 4,400,000 marks, by its taking over the assets of the six companies without their being liquidated, and by the registration of the combined undertaking under the title of I.G. Farben-Industrie, A.-G. The assets taken over include the share of the profits devolving upon the individual companies in 1925. The above details are abstracted from the directors' report, which states that the object of the amalgamation was to obtain a simplification of the organisation and a better utilisation of the works by means of a rational combination of the sale and manufacturing departments. Naturally it was only possible for the advantages hoped for to manifest themselves gradually. Although the fusion could only be legally carried out first in December, 1925, the preliminary work of organisation had begun months previously. As under the amalgamation the profits for the year 1925 have devolved upon the new company, the past year is considered as the first of the latter's activity.

Dyestuffs and Fertilisers

The report states that during the year business in dyestuffs on the whole assumed a satisfactory course. Despite the fresh competition which has arisen in other countries the company has been able to maintain its position in the market, and particularly to make progress in regard to fast colours, thanks to the good quality of the products and the uniformity of the deliveries. The combination of the works and the sales organisations within the I.G. will also render it possible in the future to meet competition successfully. The unfavourable economic situation of agriculture exercised an influence on the sale of nitrogenous fertilisers. The company participated in the measures of relief which were instituted by the Government for the improvement of the state of the agricultural industry. The hoped-for effect on the sale of nitrogenous products has already begun to be shown, and the turnover in the fertilising year 1925-26 could be reckoned to amount approximately to that of the preceding year. It is intended to continue to promote the possibilities of the use of nitrogenous products in agriculture by a corresponding adaptation of prices. The exports experienced a satisfactory augmentation.

The report goes on to state that the sale of inorganic products and of organic intermediates in Germany in 1925 remained almost without change as compared with the previous year. On the other hand, it was possible to increase the exports not immaterially, although the high Customs duties in other countries continued to exercise an extraordinary hindrance to exports. In the case of a number of products whose sale prices declined it was possible to find compensation through a reduction in the costs of production.

Statement of Accounts

A comparison of the total accounts of the individual companies for 1924 and those of the amalgamated organisation for 1925 shows the following figures:

	1924 Marks.	1925 Marks.
Gross profits	144,060,000	168,564,000
General expenses	44,090,000	45,200,000
Depreciation	45,270,000	55,570,000
Net profits	54,700,000	68,040,000 (Including amount brought in)
Percentage dividend on ordinary shares	8	10
Carried forward, marks	1,800,000	1,810,000

During the course of the present year (1926), states the report, business has continued to take a satisfactory course. In January the company (as mentioned some time ago in The Chemical Age), brought out a new "anti-knocking" motor fuel under the title of Motalin; this is being sold by the German Gasolin Company of Berlin, and is said to be beginning to be widely introduced.

Society of Glass Technology

Meeting and Annual Dinner

THE Society of Glass Technology held meetings in London and Wembley on Tuesday and Wednesday, Mr. Walter Butterworth (president) presiding. On Tuesday a meeting was held at University College, London, at which Sir W. M. Flinders Petrie lectured on "Glass in Early Ages." In the evening the annual dinner was held at the Hotel Cecil, and among the guests were Sir Edward Manville (Master of the Glaziers' Company), Mr. Alexander L. Howard (Master of the Glass Sellers' Company), touring members of the Stained Glass Association of America, and members of the British Society of Master Glass Painters.

On Wednesday, members of the Society of Glass Technology visited the Osram G.E.C. Glass Works, and the G.E.C. Research Laboratories, at Wembley, and after an inspection of the works and laboratory were entertained to luncheon. In the afternoon a meeting was held in the Library at the Research Laboratories, at which scientific papers were read and discussed.

Opal Glass

The first of the papers read at Wembley was on "Opal Glass," by Mr. J. W. Ryde, and was a communication from the G.E.C. research laboratories. The author stated that a number of commercial and experimental opal and opalescent glasses had been examined by the X-ray method in order to determine the nature of the opacifying material which separated out. Contrary to all existing theories, it was found that the opacity of fluoride glasses was due to the separation of calcium fluoride or sodium fluoride, or a mixture of both.

Mr. F. F. S. Bryson read a paper in which he described the results of some experiments on "The Electrical Conductivity of Glass at High Temperatures," which he had carried out in the laboratories of the now liquidated Glass Research Association. The experiments were made at temperatures above the softening points of the glasses. Curves were shown which gave the variation of conductivity with temperature for several sets of glasses. It was found that the substitution of silica by soda in a simple silica-soda glass caused a considerable increase in conductivity. A less marked increase in conductivity was obtained when magnesia was substituted for silica. The substitution of alumina for soda or silica resulted in a diminution of the conductivity. The relation between the viscosity of a glass and its electrical conductivity was discussed and illustrated by viscosity measurements of glasses.

Moisture in Glass Making

A paper entitled "The Influence of Moisture on the Rate of Melting and on the Properties of Soda-Lime-Silica Glasses," by Miss Edith M. Firth, Messrs. F. W. Hodkin, Michael Parkin and Professor W. E. S. Turner, was read by Professor Turner, who said it was an extension of a paper already given on the influence of moisture on the mixing of the raw production of this type of glass. Two or three months ago he had indicated that in the mixing operations there was an advantage in including a certain amount of moisture, which should not exceed 3 or 4 per cent., when the batch mixture was made up from sand, soda ash and limestone, or powdered limespar. Then came the question of the influence of the moisture on the melting of the glass, and on its subsequent properties. Four series of batch mixtures were made up for the purposes of the experiments described in the paper. The ultimate composition of the glasses, determined by analysis, was practically independent of the amount of moisture present in the batch materials. He could say with fair confidence that on the whole the effect of moisture on the ultimate composition of the glass obtained was practically negligible.

A further paper, on "The Physical Properties of Zinc Oxide Containing Glasses," by Dr. S. English and Professor Turner, was taken as read, owing to lack of time.

Aluminium Development in Canada

ARVIDA factory construction and power developments, costing $75,000,000, have taken definite form with the announcement that work will begin at Chute a Caron on June 1. This will inaugurate the enormous industrial plan formulated by the Aluminium Co. of Canada, whereby it is anticipated by the promoters that a city of 150,000 will spring up within the next few years.

Power Gas from Sludge

THE Birmingham Tame and Rea Drainage Board, which is responsible for the disposal of the sewage of Birmingham and a number of adjacent towns, has decided to install at Saltley Works at a cost of £12,515 a sludge gas power plant. In 1921 an experimental plant was put down at the Cole Hall sewage works for the generation of power from sludge gas, and the records kept since the installation and the experience gained had induced the engineer to submit a larger scheme for the utilisation of the methane gas produced from the sludge digestion tanks at the Saltley works. The Board's present power requirements are approximately 1,000,000 units per annum—a figure which is likely to increase with the development of the bio-aeration process at Minworth—and this power is obtained partly from the Corporation of Birmingham and partly from the Board's generating station adjoining Nechells refuse destructor. The agreement between the Board and the Corporation whereby steam is provided from the Nechells destructor will expire this year, and as its renewal by the Corporation is unlikely the scheme now put forward provides for the installation of plant operating on methane gas to produce 500 000 units per annum, to replace the supply hitherto taken from the destructor generating station. The engineer estimates that the saving in current will amount to £1,125 per annum. The gas produced in the fermentation of the sewage sludge is composed of 67 per cent. methane, 30 per cent. carbon dioxide, and 3 per cent. nitrogen. The calorific value is claimed to be higher than ordinary town's gas. This is the first time that methane gas has in any country ever been used on a large commercial scale, though, in a limited way, it has had similar application. Alderman Sayer, chairman of the Board, said it was proposed to utilise the gases which arose from the settlement tanks, so that instead of the amenities of the district being destroyed these gases would be usefully employed and a saving in coal effected.

As noted in THE CHEMICAL AGE a short time ago, the Illinois State Water Survey is carrying out experiments with a view to utilising sewage gases for the production of light and heat.

Death of Mr. W. P. Thompson

MR. WILLIAM PHILLIPS THOMPSON, who died last week, was a well-known figure in Liverpool and was known and respected as a patent agent all over the world. Mr. Thompson descended from an old Quaker family, and was born at Edgehill in 1842. He was educated at York, and as a young man practised as an assistant engineer on the London and North-Western Railway before going over to the United States of America, where he practised as a civil engineer. For some years he was resident engineer of the Blue Ridge and other State Railways of South Carolina. He returned to England shortly after the year 1870 and founded the firm of W. P. Thompson and Co., chartered patent agents, first at Nottingham and then at Liverpool, with, later, branches in Bradford and London.

There will be many who will remember his active work in exposing the electric sugar fraud some 30 years ago. At a time when shares in the company formed to exploit certain alleged inventions for the electric manufacture of sugar were commanding fantastic figures, he was commissioned by several interested persons to investigate the process in the United States. He did this at considerable risk, and it was not long before he was able to confirm his previously expressed convictions as to this fraud. It was he also who suggested the trade mark "Sunlight" to the late Lord Leverhulme. He took a lively interest in the preservation of commons and footpaths. He retired from active practice some three or four years ago.

German Coal and Fuel Research

IMPORTANT developments are foreshadowed in the formation, by the Rhenish-Westphalian Coal Syndicate and August Thyssen, of the Studien-und Verwertungsgesellschaft m.b.H., in Mülheim. The new company, having a capital of 30,000 marks, will have as its object the practical application and utilisation of the research results obtained in the Mülheim Coal Research Institute. Professor Franz Fischer is the director of the new company. Attention will be paid in the first place to the utilisation of the latest results on the production of oil from water-gas.

The Constitution of Coal

PROFESSOR R. V. WHEELER (of the Department of Fuel Technology, Sheffield, and Director of the Safety in Mines Research Board Experimental Station), lecturing to members of the Mining and Fuel Research Club of Birmingham University on "The Constitution of Coal," said that he wanted people to depart from the notion that because coal was formed from plants, and because one thought there were many parts of plants that went to make coal, it was a complicated substance. Chemically, coal was essentially simple. In studying the constitution of coal the rational procedure would be to see whether one could find in coal definite plant entities or the products of mouldering decay of those entities. The parts of plants particularly resistant to decay were the outer protective coverings, the stems and leaves—the cuticles—and those particularly prominent to the microscope, the spore exines. There were other parts of the plants which had no particular form to enable one to identify them, such as resin, gums and waxes. There was also the peat deposit, and a peculiar substance to which the name "ulmin" had been given. When they began to separate bituminous coal into its various constituent parts they were able to find all save the "ulmins." But recently, by research at Sheffield, it had been found that by mild oxidisation by atmospheric air at 150° Centigrade the presence of "ulmins" had been established. Chemically coal was not the complicated substance which people had hitherto regarded it as being.

Technological Education in the Midlands

PRINCESS MARY (who was accompanied by Lord Lascelles) recently formally opened the engineering and technological block of the new Technical College at Wolverhampton. The new building is the first step in a long-projected scheme for the provision of a modern college capable of meeting the present and potential needs of the important industrial area known as the Black Country. In the west wing accommodation is provided for a lecture room, a general chemical laboratory, a metallurgical laboratory supplied with gas-fired furnaces, a room for microscopic work, classrooms and other departments. The building cost £39,000, and to equip it there have been generous gifts of machinery and apparatus amounting in value to many thousands of pounds. The plans for the extension of the college were estimated to cost about £113,000, and the college when completed about £152,000.

Optical Apparatus for Lighthouses

A NUMBER of lectures were given in the evenings during the recent Optical Convention, including one on "Lighthouses and the Optical Apparatus Used in Them," by Mr. J. R. Wharton, director of Messrs. Chance Brothers and Co., Ltd. Mr. Wharton reviewed the history of lighthouses, from the Colossus of Rhodes and the Pharos of Alexandria up to the present time. England, he said, had now about 1,000 lighthouses, and Scotland and Ireland nearly 2,000. Fresnel broke up the solid lens into steps; but according to Thomas Stevenson (1880), the optical work should contain a minimum number of glass agents, lenses and prisms, and no metallic reflectors. J. Hopkinson introduced group flashing in 1874. Mercury floats, instead of the roller bearings of Stevenson, for revolving lanterns, came in soon afterwards. The glass used by Messrs. Chance, the only firm which carried the whole manufacture of optical lighthouse apparatus right through, was a hard crown. The old wick burners were in 1905 superseded by incandescent oil burners. Electric arcs were not much liked in England, one of the reasons being that the rays were deficient in red and did not penetrate mists. But 4-kw. gas-filled lamps of 80 volts and 8,000 candles were now supplied by the G.E.C. In the new guiding lights for aeroplanes the problems were more pronouncedly three dimensional. The beam from the lower portion of the system was made very strong and was sent upwards by refracting prisms, lest the airman lost his guiding light. In the three-tier light, however, just supplied to Farnborough, the top portion showed a fan beam from the horizontal to the vertical.

The Japanese Wembley

THIS PHOTOGRAPH SHOWS SOME OF THE FINE BUILDINGS ERECTED FOR THE SECOND JAPANESE CHEMICAL EXHIBITION WHICH IS BEING HELD IN UYENO PARK, TOKYO, JAPAN.

Indian Chemical Notes

[From Our Indian Correspondent.]

The Indian iron and steel industry has assumed considerable proportions, and for future advance an examination of the position regarding raw materials had become necessary. This examination was recently made by Dr. Fox, of the Geological Survey, and the results are given in an exhaustive paper. Dr. Fox points out that so far as iron ore is concerned there is enough material to last three hundred years in the Singhbhum and Orissa alone. As regards, however, the supply of coal for metallurgical purposes, this is limited in quantity, on which account conservation will have to be attempted. This can be done, in Dr. Fox's opinion, by so treating the ordinary kind of coal by scientific processes of washing and cleaning, that it can be used for purposes for which good coal is used now, so that the better variety can be conserved solely for metallurgical use.

As regards materials to be used as fluxing agents, apatite deposits exist in abundance, but limestone, though found everywhere, is either not of the right quality or where of right quality is far from the iron fields. The supply of modifying metals, such as chromium, tungsten, manganese, etc., is adequate. Of refractory materials some want is felt, but recently deposits of kyanite, a mineral of chemical composition identical with sillimanite, have been discovered in Manbhum district.

Chemical Manufactures

The Burma Chemical Industries, Ltd., are making very good progress. The results of their working during 1925 brought in a good profit and a dividend of 20 per cent. was declared. The plant has been working with greater efficiency than ever. Certain improvements have recently been effected. Though work has continued at high pressure, the demand for sulphuric acid has grown so much that the company had to effect comprehensive extensions and renewals. At the same time considerable economies in working are being effected.

Owing to the increased price of imported raw materials the manufacture of essential oils in Mysore State has received some setback, and operations are now concentrated on manufacture from Indian products such as cardamoms, ajwan seed, cinnamon, etc. Several improvements have also been introduced in the process. The plantation of Indian lavender and the factory at Tatguni have been considerably expanded. The manufacture of reinforced concrete is also receiving attention. The Mysore Match Manufacturing Co. commenced erection of the factory and orders have already been placed for machinery. The Pioneer Magnesia Works were not able to do much business during the last year in manufacturing and selling magnesium chloride, prepared from the waste mother liquor, owing to the formidable rivalry of the imported German article. The demand for protection was refused by the Tariff Board.

Cotton Technology

The Spinning and Technological Laboratory, established in Bombay by the Indian Central Cotton Committee to carry on technological research in cotton, has now been adequately equipped and has begun work in earnest. With a view to determining the effect of climate on lint quality and the extent of seasonal variations, tests on the improved varieties of cotton grown under standard conditions are now being repeatedly worked out. The work in the Research Laboratory has been co-ordinated with that of the Spinning Laboratory. Determinations of staple length and of the distribution of staple length in any given sample are invariably carried out on every cotton submitted for test. These determinations are made by means of two instruments, known respectively as the Ball Sorter and Baer Sorter, the results from the two instruments giving mutual checks. Measurements are also made by means of the microscope of the staple length, the fibre width, and the number and distribution of the natural twists in the cotton fibre, known as convolutions. It is by the accumulation of the results of experiments of this kind and their subsequent statistical analysis that it is hoped to solve the problem as to the relation between the properties of a cotton and its spinning value.

The Cement Industry

The results of the working of the Bundi Cement Factory in 1925 showed a record output in spite of low prices and keen competition. This was due to additions and improvements in the plant. The company has been able to dispose of the whole of its output. It will be recalled that the Tariff Board, after proper investigation, had recommended protection to the industry, but the Government of India rejected the proposal on the ground that the real competition was not between the imported and the indigenous articles but among the Indian cement manufacturers themselves. The Indian cement manufacturers, however, consider that the situation has now altered and it is understood they are going to approach the Government of India again with a representation for protection, so that the indigenous industry may secure the 100,000 tons of business which it now misses by the influx of foreign cement. Meanwhile the market for Indian cement is being greatly extended, and this process will be accelerated if the present policy of co-operation in developing the interests of the trade is maintained.

Some Interesting Developments

The Ogale Glass Works in the Bombay Presidency have largely extended their works and have added large, up-to-date and well equipped workshops for manufacturing hurricane lanterns complete, including a plant for manufacturing corrugated straw boards for packing the lanterns and other glass articles turned out by the factory. The Sorab Dalal Tile Works in Kathiawar have now succeeded in manufacturing acid proof jars, large and small. These jars are now in good demand and it is proposed to construct a branch factory in the suburbs of Bombay. The Godrej Soap Works in Bombay have extended their operations very considerably and their new buildings are approaching completion. They are producing toilet soap in large quantities from purely vegetable material, and on that account get a good demand for their products.

S. G. W.

Independent Electricity Plants

To the Editor of The Chemical Age.

Sir,—One of the first steps taken by the Government to deal with the situation created by the general strike was to restrict the use of electric power. As a direct consequence, many works were compelled to work short time, although they were really in a position to carry on normally. The resulting loss to the firms concerned and the hardship to their employees were, unfortunately, unavoidable, and everyone must agree that the Government acted wisely in imposing the restrictions. The very fact that these restrictions were necessary does, however, make one wonder whether the Government will still proceed confidently with its electricity scheme.

The general strike has forcibly demonstrated the value of the independent power plant. Manufacturers who generated their own power and were, consequently, not dependent on the electric power stations found themselves in a very favourable position, and it is certain that many of those who suffered under the restrictions will profit by the lessons the strike has taught them, and will install their own power plant at the earliest opportunity. Cheap and plentiful power is one of the country's greatest needs, but it is a great mistake to assume that super power stations are the only means of providing it. Power can be produced now in private plants quite as cheaply as (and in some cases even cheaper than) the super power stations will be able to distribute it. It is, of course, the distributed cost that the consumer will pay, which is quite a different thing from the cost of production.

In common with most other makers of power plant, we can show the manufacturers of this country how to produce electric power and light for use in their own works, at from $\frac{5}{8}$d. to 1d. per unit (everything included), at the same time rendering them quite independent of power station strikes or lock-outs.—Yours, etc.,

For Blackstone and Co., Ltd.,
G. M. Blackstone,
Managing Director.

Stamford, May 26.

(Continued from p. 502)

From Week to Week

THE ANNUAL VISIT OF INSPECTION to the National Physical Laboratory at Teddington has been fixed for Tuesday, June 22.

DR. WILLIAM BLUM, chief of the electrochemical section of the U.S. Bureau of Standards is the recipient of the first medal awarded by the American Institute of Chemists.

THE CHANDLER MEDAL, awarded annually by Columbia University, has been won for this year by Mr. Samuel Wilson Parr, professor of applied chemistry at the University of Illinois and an authority on the chemistry of coal.

NINE TONS OF CELLULOID, which were being taken on a steam wagon and trailer to the British Pluviusin Co., Monton, burst into flames, which rose to a height of over 80 ft. and destroyed telephone wires by the side of the road.

THE OLD SALTWORKS and grounds at Wheelock and Malkins Bank, near Sandbach, said to have been in existence for over a century, have been closed and the various sites and other properties, which represent a large acreage, are to be sold.

AN EXHIBITION OF WEIGHING AND MEASURING INSTRUMENTS was held this week, from Thursday to Saturday, at the Central Hall, Westminster, in connection with the annual conference of the Incorporated Society of Inspectors of Weights and Measures.

A PARIS REPORT states that Professor Vincent's researches into the action of chemical salts of the soaps category on microbic toxins have resulted in the neutralisation of the toxins of tetanus, dysentery, and typhoid fever, by palmitate of sodium administered in infinitesimal doses.

MR. W. F. SADLER, special director and general manager of Vickers, Ltd., has been obliged on medical advice to retire completely from business. Mr. Sadler was for many years with Vickers, Ltd., at their Barrow-in-Furness works before joining the firm's head office in London in August, 1918.

IN A PAPER BEFORE THE ILLUMINATING ENGINEERING SOCIETY on Monday, Mr. John W. T. Walsh said that a research committee set up by the Department of Scientific and Industrial Research working in conjunction with ophthalmologists would be considering the relation of lighting to the human eye.

A RESOLUTION PASSED at a meeting of the Council of the Pharmaceutical Society of Great Britain, has been submitted for the approval of the Privy Council and is designed to ease the situation for farmers and others who have experienced difficulty in procuring arsenical and other poisonous sheep washes.

FIGURES PUBLISHED in the *Ministry of Labour Gazette* for May give the total estimated number of insured unemployed persons in the various industries as:—Chemical manufacture, 6,461; explosives, 1,423; paint, varnish, Japan, red and white lead, 792; oil, grease, glue, soap, ink, match, etc., 4,923; and textile dyeing and bleaching, 5,589.

AT BRADFORD CITY POLICE COURT recently G. W. Harrison and Co., metal workers, were ordered to pay fines totalling £9, with two guineas costs, for employing three youths for more than seven working days without a certificate of fitness. It was stated that the defendants made cisterns, the metals used being lead and antimony, and that when the three youths were examined one was suffering from lead poisoning.

IT IS REPORTED from Berlin that the German I.G. is constructing a new plant at Dormhagen, near Cologne, for the production of artificial silk by the acetate process, patented by the J. P. Bemberg Co. of Barmen, which with the Vereinigte Glauztoff-Fabrik of Elberfeld has entered into an agreement with the I.G. for its artificial silk manufacturing extensions. At one of its Bitterfeld plants the Agfa Works is already making rayon by the viscose method, and the cuprammonium process is being used at the Bayer Works at Elberfeld.

MR. A. T. EGGINGTON, headmaster, Loughborough Junior College, giving a lecture on "Chemical Warfare," at Loughborough Rotary Club, contended that the statement that chemical warfare was cruel was not borne out by the facts, records proving that a small percentage of the gas casualties were either fatal or permanent. From the point of view of humanity—if there could be any in war—it was more humane to use chemical methods. Now we were cutting down armaments chemical armaments became more important because they were the easiest to produce, and we as a nation could not afford to neglect the dyestuff and drug industries.

FOLLOWING the recent announcement in THE CHEMICAL AGE of the decision of the German I.G. to establish a sales and distribution organisation in Manchester for Great Britain, it is reported that the company has just opened a sales agency in Belgrade for the exclusive distribution of German dyes in that territory. A further report states that I.G. is planning a central warehouse at Arnheim in Holland for the distribution of its dyes in the country. This agency will be known as the Defa, and the company's separate warehouses at Amsterdam, Rotterdam, Tilbury and Enschede will be concentrated in the new unit. The former sales agencies of the I.G. in Switzerland have been fused into one organisation, the Teerfaben A.G. of Zurich, with a capital of 500,000 Swiss francs.

A RECORD MONTH in the sale of Cope's Feed Water Regulators has been experienced by James Gordon and Co., fifty sets having been ordered during May for super power stations.

COURTAULDS LTD. intend to open a new factory at Holywell Junction, North Wales. The information was given by Mr. John Petrie at a recent meeting of the Holywell Rural District Council. The factory is to be erected on land bought about seven years ago.

IT WAS ANNOUNCED at the annual meeting of Hadfields, Ltd., Sheffield, that the company had acquired a controlling interest in Harper, Sons and Bean, Ltd., of Dudley, and that in future all the important components of the "Bean" car would be produced in Sheffield from the famous "Hadfield" steel.

THE QUESTION whether the British Phosphate Company's Australasian head office is to be removed to New Zealand or not is arousing much discussion in Australia, and the Australian Federal Government has announced its intention of doing everything possible to prevent its removal from the Commonwealth.

THE LECTURE ON "THE RELATIONSHIP OF PHYSICS TO AERONAUTICAL RESEARCH," which was to have been given under the auspices of the Institute of Physics by Mr. H. E. Wimperis on May 11, is now fixed for Monday, June 7, at 5.30 p.m. in the Physics Theatre, Royal College of Science, South Kensington.

SIR FRANK HEATH'S report closely following the organisation of the British Department of Scientific and Industrial Research has led to the introduction of two Bills placing the Australian Institute of Science and Industry, which is renamed the Council of Scientific and Industrial Research, on a permanent and extended basis.

THE GENERAL DISCUSSION ON "EXPLOSIVE REACTIONS IN GASEOUS MEDIA," arranged by the Faraday Society, which was to have been held on May 13, will now take place at 2.30 p.m. on Monday, June 14, in the Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster. Copies of the programme, which remains unchanged, may be obtained on application to the Faraday Society, 90, Great Russell Street, London.

A CABLE FROM THE Chilean Nitrate Producers' Association, Valparaiso, states that on May 29 the Board fixed prices at a reduction of one shilling per metric quintal on last year's scale, starting at 18s. 3d. for June shipment and rising to 19s. 9d. for January, 1927, shipment. It is further stated that no fall clause of any description will be conceded on sales made after Saturday, May 29, 1926. Other conditions of sale are the same as those for last season.

ACCORDING TO the *Ministry of Labour Gazette*, the total number of cases of poisoning, anthrax and epitheliomatous and chrome ulceration in Great Britain and Northern Ireland, in April, reported under the Factory and Workshhop Act was 47, including four red and white lead workers, and four and five cases of arsenical and aniline poisoning, respectively. Three workers in the chemical industries dieo as the result of fatal industrial accidents, and one person in the textile bleaching and dyeing trade died from the same cause.

MR. R. W. DALTON, H.M. Senior Trade Commissioner in Australia, has arrived in this country for the purpose of an official visit. Mr. Dalton will be in attendance at the offices of the Overseas Department for a period of one month from May 31, and during that period he will be glad to meet representatives of United Kingdom firms interested in the export of British goods to Australia. Applications for interviews should be made at once to the Comptroller-General, Department of Overseas Trade, 35, Old Queen Street, London, S.W.1, quoting the reference No. 4187/1/26.

INTERNATIONAL COMBUSTION, LTD., of Africa House, Kingsway, London, inform us that their associated company in America have recently received a number of contracts for Lopulco pulverised fuel equipment for the following installations:—Boston Elevated Railway, Lopulco Unit System for 2 B. and W. boilers, each having 20,750 sq. ft. heating surface; New York Steam Co., Lopulco pulverised fuel fired furnaces for six Edgemoor boilers, having 7,000 sq. ft. heating surface; Metropolitan Power Co., complete Lopulco pulverised fuel system equipped with fin furnaces and air heaters with one Connely boiler, having 14,710 sq. ft. heating surface; Detroit Edison Co., complete Lopulco pulverised fuel equipment for three Stirling boilers, each having 29,000 sq. ft. heating surface; Fisher Body Corporation, one Lopulco unit system for one Heine boiler, having 7,200 sq. ft. heating surface. A further 24 contracts also obtained include 43 stoker fired boilers and two patent combustion steam generators.

Obituary

MR. W. P. THOMPSON, founder of the firm of W. P. Thompson and Co., chartered patent agents, of Liverpool. Particulars of his career appear elsewhere.

DR. CARL HERING, aged 66, in Philadelphia, on May 10. Dr. Hering was a consulting engineer, and was also well known for his work in electrochemistry and electrometallurgy. He discovered the "pinch" effect and carried out researches on storage batteries and on electric furnaces. He helped to found the American Electrochemical Society, was concerned in the inception of the journal known as *Electrochemical Industry* (now *Chemical and Metallurgical Engineering*), and had acted as editor of the *Electrical World*. He was an ex-president of the American Institute of Electrical Engineers.

References to Current Literature

British

ACIDS.—Hydrofluozirconic acid and the analysis of zirconium fluoride. E. B. R. Prideaux and E. C. Roper. *Chem. Soc. Trans.*, April, 1926, pp. 898–903.

ADSORPTION.—The adsorption of gases by activated charcoal at very low pressures. H. Rowe. *Phil. Mag.*, Part I, January, 1926, pp. 109–131; Part II, May, 1926, pp. 1042–1054.

ANALYSIS.—An accurate method for the determination of mercury in solution. B. S. Evans and S. G. Clarke. *Analyst*, May, 1926, pp. 224–229.

An apparatus for continuous percolation and for filtration in neutral atmospheres. B. S. Evans. *Analyst*, May, 1926, pp. 229–235.

CATALYSIS.—Catalysis in industrial chemistry. H. Seymour. *Ind. Chem.*, May, 1926, pp. 226–229.

ELECTRO-CHEMISTRY.—The electromotive behaviour of cupric oxide. R. E. W. Maddison. *Trans. Faraday Soc.*, January, 1926, pp. 27–33.

The oxidation potential of the system selenium dioxide–selenium. S. R. Carter, J. A. V. Butler and F. James. *Chem. Soc. Trans.*, April, 1926, pp. 930–937.

PHOTO-CHEMISTRY.—Photochemical reactions in liquids and gases. Part I. Einstein's law of photochemical equivalence; Part II. The mechanism of photochemical reactions. *Trans. Faraday Soc.*, February, 1926, pp. 438–656.

PLANT.—Machines used in magnetic separation. B. I. Rolling. *J.S.C.I.*, Part I, May 14, 1926, pp. 344–345; Part II, May 21, 1926, pp. 352–355.

SPECTROSCOPY.—Absorption spectra of condensed nuclear hydrocarbons. N. S. Capper and J. K. Marsh. *Chem. Soc. Trans.*, April, 1926, pp. 724–730.

The absorption spectra of various derivatives of salicylic acid. J. E. Purvis. *Chem. Soc. Trans.*, April, 1926, pp. 775–778.

SUGARS.—The constitution of maltose. J. C. Irvine and I. M. A. Black. *Chem. Soc. Trans.*, April, 1926, pp. 862–875.

Synthesis of derivatives of *y*-xylose. W. N. Haworth and G. C. Westgarth. *Chem. Soc. Trans., April*, 1926, pp. 880–887.

VITAMINS.—Vitamins in heat-sterilised food. C. M. Dugdale and R. J. Munro. *J.S.C.I.*, May 21, 1926, pp. 135–140T

United States

ANALYSIS.—A new micro-method for determining carbon in organic compounds. H. L. Lochte. *J. Amer. Chem. Soc.*, May, 1926, pp. 1301–1305.

The refractometric determination of alcohols and esters in aqueous and in cottonseed oil solutions. J. C. Munch. *J. Amer. Chem. Soc.*, April, 1926, pp. 994–1003.

CARBONYLS.—The constitution of nickel carbonyl and the nature of secondary valence. A. A. Blanchard and W. L. Gilliland. *J. Amer. Chem. Soc.*, April, 1926, pp. 872–882.

GENERAL.—Correction of radio interference from Cottrell precipitators. J. J. Jakosky. *Chem. Met. Eng.*, April, 1926, pp. 221–226.

HYDRAZINES.—Symmetrical di-methylphenylmethyl-hydrazine and related compounds. W. A. Schulze and H. L. Lochte. *J. Amer. Chem. Soc.*, April, 1926, pp. 1030–1035.

HYDROGEN.—Hydrogen from water gas. Catalysts for its production. R. M. Evans and W. L. Newton. *J. Ind. Eng. Chem.*, May, 1926, pp. 513–517.

LUBRICANTS.—Lubricating value as related to certain physical and chemical properties of oils. L. W. Parsons and G. R. Taylor. *J. Ind. Eng. Chem.*, May, 1926, pp. 493–496.

Some little understood factors affecting lubrication. E. G. Gilson. *J. Ind. Eng. Chem.*, May, 1926, pp. 467–470.

REACTIONS.—Influence of rate of stirring on reaction velocity. F. C. Huber and E. E. Reid. *J. Ind. Eng. Chem.*, May, 1926, pp. 535–538.

The rate of the reaction between ethylene and chlorine. T. D. Stewart and R. D. Fowler. *J. Amer. Chem. Soc.*, May, 1926, pp. 1187–1194.

Velocity-temperature coefficient in liquid media. H. Essex and O. Gelormini. *J. Amer. Chem. Soc.*, April, 1926, pp. 882–894.

RUBBER.—Effect of heat generated during stressing upon the tensile properties of rubber. C. E. Boone and J. R. Newman. *J. Ind. Eng. Chem.*, May, 1926, pp. 539–540.

Rubber di (hydroxyphenyl) and its dimethyl ether. H. L. Fisher, H. Gray and E. M. McColm. *J. Amer. Chem. Soc.*, May, 1926, pp. 1309-1312.

SILICON COMPOUNDS.—Preparation of disilicon hexachloride. J. B. Quig and J. A. Wilkinson. *J. Amer. Chem. Soc.*, April, 1926, pp. 902–906.

VISCOSITIES.—The viscosity of aqueous solutions of the silicates of soda. V. R. Main. *J. Phys. Chem.*, April, 1926, pp. 535–561.

French

ACIDS.—The structure of pyruvic acid. P. Pascal. *Bull. Soc. Chim.*, March, 1926, pp. 396–398.

Crystalline salts of abietic acid. G. Dupont and L. Desalbres. *Bull. Soc. Chim.*, March, 1926, pp. 492–495.

ADSORPTION.—Adsorption and cataphoresis. K. van der Grinten. *J. Chim. Phys.*, March, 1926, pp. 209–237.

The mechanism of ionic adsorption. R. Audubert and M. Quintin. *J. Chim. Phys.*, February, 1926, pp. 176–196.

ANALYSIS.—The problem of the industrial estimation of tannin. L. Meunier and A. Jamet. *Chem. et Ind.*, April, 1926, pp. 499–505.

The preparation of a crystalline sodium abietate and its use for the estimation of abietic acid in resins. G. Dupont, L. Desalbres and A. Bernette. *Bull. Soc. Chim.*, March, 1926, pp. 488–492.

CAMPHOR.—The methods for the industrial synthesis of camphor. J. Dubourg. *La Technique Moderne*, March 15, 1926, pp. 170–172.

CYCLIC COMPOUNDS.—*o*-Cyclohexyl-cyclohexanóls. P. Eedos. *Bull. Soc. Chim.*, March, 1926, pp. 473–487.

LIGHTING GAS.—Liquid purification of coal gas and recuperation of the sulphur. C. Harnist. *Chim. et Ind.*, April, 1926, pp. 506–513.

PHOTO-CHEMISTRY.—The photochemical synthesis of hydrochloric acid. J. Cathala. *J. Chim. Phys.*, January, 1926, pp. 78–96.

The rule of additivity in mixed photochemical reactions. A. Berthoud. *J. Chim. Phys.*, March, 1926, pp. 251–255.

SULPHATES.—The decomposition of metallic sulphates by heat. Dissociation of calcium sulphate. G. Marchal. *J. Chim. Phys.*, January, 1926, pp. 38–60.

Action of silica on some metallic sulphates. G. Marchal. *Bull. Soc. Chim.*, March, 1926, pp. 401–408.

SULPHIDES.—Diphenylene sulphide. C. Courtot and C. Pomonis. *Compt. rend.*, April 12, 1926, pp. 931–932.

Study in the diphenylene sulphide series. C. Courtot and C. Pomonis. *Compt. rend.*, April 7, 1926, pp. 893–895.

THERMO-CHEMISTRY.—The heats of combustion of some cyclic hydrocarbons. D. P. Konovalow. *J. Chem. Phys.*, April, 1926, pp. 359–362.

German

ANALYSIS.—Analysis of chlorides by conversion into carbonate or oxide by means of oxalic acid. W. Moldenhauer. *Z. angew, Chem.*, May 6, 1926, pp. 557–559.

The volumetric estimation of chromium and manganese with potassium permanganate in acetic acid solution. Part II. Manganese. B. Reinitzer and P. Conrath. *Z. anal. Chem.*, Nos. 4–5, 1926, pp. 129–155.

COKING.—The thermal analysis of coking. H. Winter. *Brennstoff-Chem.*, April 15, 1926, pp. 117–123.

HYDROGENATION.—Catalytic hydrogenation under pressure in the presence of nickel salts. Part X. Acenaphthene quinone. J. v. Braun and O. Bayer. *Ber.*, May 5, 1926, pp. 920–923.

PLANT.—The present position as regards acid-proof iron. T. Hoffmann. *Chem. Apparatur*: Part I, March 25, 1926, pp. 69–70; Part II, April 19, 1926, pp. 77–79; Part III, May 10, 1926, pp. 103–106.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each

Abstracts of Complete Specifications

250,661. CARBONISATION OF COAL, PEAT, WOOD, ETC. C. B. Winzer, 68, Drakefield Road, Tooting, London, S.W., and P. A. Brown, 1, Enmore Gardens, East Sheen, London, S.W. Application date, January 14, 1925.

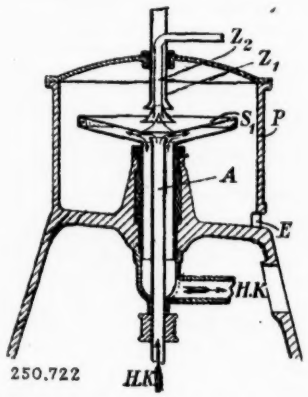
Coal, shale, peat, wood, etc., are continuously carbonised in open containers which are charged in a cold part of a closed muffle or oven and then passed through a part of the muffle which is heated by passing hot gases helically around it. The material is subjected to a gradually increasing temperature, and the volatile products collected as evolved. The carbon is discharged in a cooler part of the oven.

250,701. AROMATIC HYDROCARBONS, PROCESS FOR PRODUCING BY CRACKING. A. E. Dunstan, R. Pitkethly and E. S. L. Beale, Meadhurst, Cadbury Road, Sunbury-on-Thames. Application dates, January 29 and October 29, 1925.

The process employs the residue obtained in the purification of kerosene and heavier oils by treatment with sulphur dioxide. This residue is subjected to a temperature of 420°–440° C. and pressure up to 1,000 lb. per sq. in., whereby a substantial proportion of products boiling below 200° C. may be obtained.

250,722. CHEMICAL REACTIONS, METHOD AND APPARATUS FOR CARRYING OUT. E. Buhtz, 12, Lessingstrasse, Berlin, N.W., Germany. Application date, February 26, 1925.

This apparatus is for bringing the reacting substances intimately into contact with one another on a rotating horizontal surface. The rotary surface S_1 is mounted on a shaft A, and the reacting substances are fed through conduits Z_1, Z_2 in liquid form. The product is discharged through the outlet E in the casing P. Heating or cooling media may be supplied through the conduits HK.



250,785. DYESTUFFS OF THE TRIPHENYLMETHANE SERIES. A. G. Bloxam, London. From Chemische Fabrik Griesheim-Elektron, Frankfurt-on-Main, Germany. Application date, May 29, 1925.

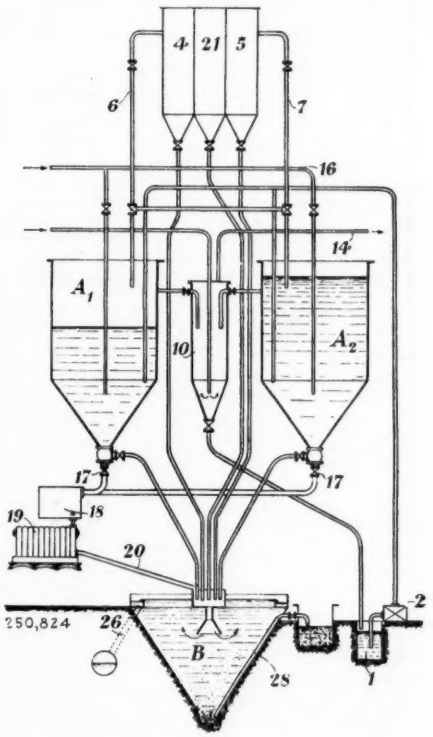
These are greenish-blue dyestuffs, and are fast to alkali; they are sulpho and halogen derivatives of the dibenzyl-dialkyl-diamino-triphenyl-carbinol-ortho-sulphonic acid. One molecule of orthosulphobenzaldehyde and two molecules of an alkylbenzyl-arylamine, substituted in the benzyl group by halogen and sulpho groups are condensed, and the product oxidised. Suitable alkylbenzyl-arylamines are ortho-, meta-, and para-chlorobenzyl-ethylaniline, and 2 : 4- and 2 : 6-dichlorobenzyl-ethylaniline. The bromine derivatives and derivatives of benzyl-methylaniline may be used.

250,819. DIARYLAMINES. O. Y. Imray, London. From Soc. of Chemical Industry in Basle, Switzerland. Application date, September 11, 1925.

To obtain nuclear substitution products of diphenylamine, a nuclear halogen substitution product of a benzene hydrocarbon is treated with an alkali metal compound of a primary aromatic amino body of the benzene series, one or both of the reacting substances containing at least one nuclear substituent as well as halogen or the amino group. Copper or a copper compound may be present as a catalyst. Ortho-ortho^1-ditolylamine may be obtained from ortho-toluidine and ortho-chlorotoluene, ortho-tolyl-phenylamine from ortho-chlorotoluene and aniline, ortho-para-ditolylamine from para-chlorotoluene and ortho-toluidine, and 4^1-chloro-ortho-ortho^1-ditolylamine from 2 : 5-dichloro-toluene and ortho-toluidine.

250,824. TREATING WASTE LIQUORS CONTAINING CYANOGEN COMPOUNDS. J. Denis, 59, Rue de Namur, Brussels. Application date, September 18, 1925.

The object is to purify water containing cyanogen compounds, phenols, and hydrocarbons, and to recover the cyanogen compounds in a concentrated form. The water is mixed with an alkali or alkaline earth hydrate and ferrous sulphate, and is treated with carbon dioxide to precipitate iron ferrocyanide which is recovered as a blue sludge. The liquor is then treated with barium hydrate to remove the last traces of ferrocyanide. When phenols and hydrocarbons are present, they are separated by difference of density before or after the above reactions.

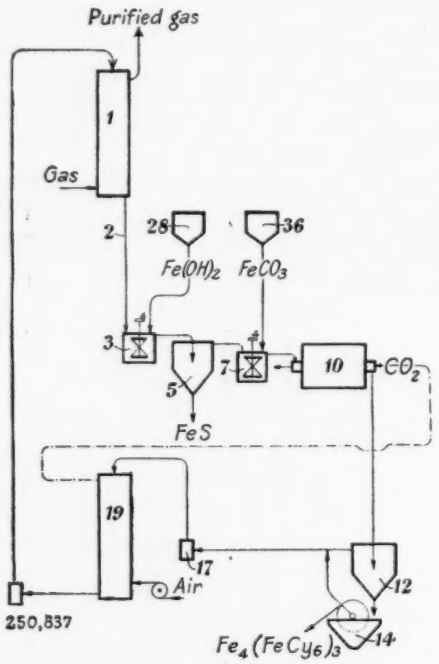


The water to be purified is raised by a pump 2 from a tank 1 to a chamber A_1, and lime water and ferrous sulphate are added from vessels 4, 5 through pipes 6, 7. The phenols and hydrocarbons collect on the surface and the superficial liquid is drawn off to a chamber 10. Air is passed through the liquid and is drawn off, charged with phenols and hydrocarbons, through a pipe 14. Carbon dioxide is simultaneously passed through pipe 16 into vessel A_1 to precipitate Prussian blue, which is discharged through valve 17 to a tank 18 and filter 19. The acid filtrate passes through a pipe 20 to a tank B which also receives the liquor from vessel A_1. Barium

hydrate solution is prepared in vessel 21, and passes to tank B where it reacts with the calcium bicarbonate to precipitate calcium and barium carbonates which entrain the last traces of ferrocyanide. Water is drawn off through pipe 26 and the precipitate through pipe 28. The vessels A_1 and A_2 are used alternately.

250,837. Purification of Gases, Process for. S. Coulier, 31, Rue Ernest Laude, Brussels. Application date, October 8, 1925.

The object is to recover sulphuretted hydrogen and cyanogen from gases. Coke-oven or coal gas is freed from tar and ammonia, and is passed upwards through a tower 1 in contact



with sodium carbonate solution, which then passes through pipe 2 to a mixer 3 where it is treated with ferrous hydrate prepared in a vessel 28. The solution with iron sulphide in suspension passes to a vessel 5 from which the solution is decanted to a mixer 7. Iron carbonate is added from a vessel 36, and the mixture passes to a rotary washer 10 where it is treated with carbon dioxide to produce iron ferro-cyanide. This is deposited in a vessel 12 and passes to a rotary filter 14. The liquor and filtrate pass to a pump 17 and tower 19 where it is treated with air to regenerate sodium carbonate solution. In a modification, the regeneration of the bicarbonated solution from the vessel 12 is effected by treating with ferrous or ferric hydroxide.

250,883. Mono-oxamic Acids of Diaminoanthraquinones. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, H. M. Bunbury, Crumpsall Vale Chemical Works, Blackley, Manchester, and R. Robinson, The University, Manchester. Application date, December 19, 1924.

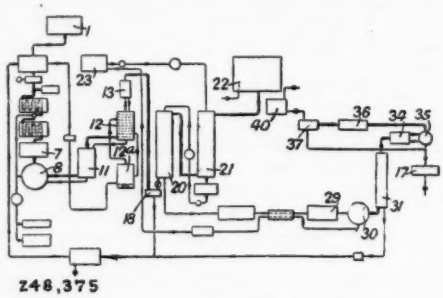
Mono-oxamic acids are obtained by heating diaminoanthraquinones, oxalic acid, and water at 105°–110° C. These acids are of the type $NH_2.AQ.NH.CO.COOH$, where AQ represents a divalent anthraquinone residue.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—232,262 (H. Pereira), relating to manufacture of dyes, see Vol. XII, p. 617 ; 235,548 (J. Mayer and Sohn), relating to recovery of chromium from leather industry waste, see Vol. XIII, p. 176 ; 235,860 (Rhenania Verein Chemischer Fabriken Akt.-Ges.), relating to manufacture of fertilisers, see Vol. XIII, p. 201 ; 243,368 (Distilleries des Deux Sèvres), relating to dehydration of impure alcohol, see Vol. XIV, p. 114.

International Specifications not yet Accepted

248,375. Olefines and Alcohols. Petroleum Chemical Corporation, 30, Broad Street, New York. (Assignees of H. S. Davis and W. J. Murray, 30, Charles River Road, Cambridge, Mass., U.S.A.) International Convention date, February 24, 1925.

To obtain a mixture of olefines, gas oil from a tank 1 is vaporised, and cracked in a tube 7 at 600°–650° C. The products pass through a separator 8, towers 11, 12, condenser 13, and cooler 18. Condensate from 13 flows through the tower 12 and condensate from 12 is freed from lighter hydrocarbons in a tower 12*a* and flows through the tower 11. Uncondensed olefines from the cooler 18 pass through scrubbers 20, 21, fed with cool oil from tank 23, and the unabsorbed ethylene and propylene pass to a holder 22. Saturated oil from scrubber 20 passes to a still 29 and vaporiser 30 to a tower 31, where dissolved olefines are separated. These pass through a condenser 34, separator 35, compressor 36, to a storage tank 37, yielding a condensate of amylenes which passes to a tank 17. The uncondensed butylenes pass to a



holder 40. The fraction in the holder 22 is treated with sulphuric acid of 80–84 per cent. strength, whereby any olefines higher than propylene are removed, and then with stronger acid to absorb propylene. The ethylene may then be absorbed by hot sulphuric acid. The products can be hydrolysed to yield ethyl and isopropyl alcohols, and by treating the butylene fraction in the holder 40 in a similar manner, tertiary and secondary butyl alcohols are obtained. The amylene fraction in the tank 17 can be treated in a similar manner, or, alternatively, may be distilled in three fractions—isopropyl ethylene, the remaining amylenes, and hexylenes and higher olefines. The second fraction is treated with concentrated hydrochloric acid to obtain chlorides which may be hydrolysed to obtain tertiary alcohols.

248,404. Camphene. G. H. Dupont, 29, Rue Marceau, Cauderan, Gironde, France, and G. Brus, 60, Avenue du Sidobre, Castres, France. International Convention date, March 2, 1925.

Pinene hydrochloride is obtained by treating crude turpentine oil with dry hydrochloric acid and washing with soda. Dry sodium carbonate is dissolved in molten colophany and the product heated with pinene hydrochloride to 160° C. under reflux conditions. The camphene produced is steam-distilled off, and the resin remaining is again treated with sodium carbonate as above. The camphene can be converted into isoborneol.

248,726. Synthetic resins. Bakelite Ges., 43, Hardenbergstrasse, Charlottenburg, Berlin. March 6, 1925. Addition to 247,956.

Phenol-aldehyde condensation products are purified by treating with oxides or hydroxides of calcium, barium, strontium, magnesium, aluminium, copper, zinc or nickel.

248,729. Urea-Aldehyde Condensation Products. F. Pollak, 20, Langegasse, Vienna. International Convention date, March 3, 1925.

To obtain hydrophobe condensation products of urea or its derivatives with formaldehyde, the first condensation is effected in the presence of organic substances capable of forming condensation products with the aldehyde in an acid medium, such as thiourea or phenol. The hydrogen ion concentration is then adjusted to a value exceeding 7, and the mixture heated to precipitate the resin. The hydrophobe resin can be hardened as usual.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

Acid Acetic, 40% Tech.—£19 per ton.

Acid Boric, Commercial.—Crystal, £37 per ton, Powder, £39 per ton.

Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

Acid Nitric, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.

Bisulphite of Lime.—£7 10s. per ton, packages extra, returnable.

Bleaching Powder.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.

Borax, Commercial.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

Calcium Chlorate (Solid).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carr. paid.

Copper Sulphate.—£25 to £25 10s. per ton.

Methylated Spirit 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

Nickel Sulphate.—£38 per ton d/d.

Nickel Ammonia Sulphate.—£38 per ton d/d.

Potash Caustic.—£30 to £33 per ton.

Potassium Bichromate.—4½d. per lb.

Potassium Chlorate.—3½d. per lb., ex wharf, London, in cwt. kegs.

Salammoniac.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

Salt Cake.—£3 15s. to £4 per ton d/d. In bulk.

Soda Caustic, Solid.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

Soda Crystals.—£5 to £5 5s. per ton ex railway depots or ports.

Sodium Acetate 97/98%.—£21 per ton.

Sodium Bicarbonate.—£10 10s. per ton, carr. paid.

Sodium Bichromate.—3½d. per lb.

Sodium Bisulphite Powder 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

Sodium Chlorate.—3d. per lb.

Sodium Nitrite, 100% Basis.—£27 per ton d/d.

Sodium Phosphate.—£14 per ton, f.o.r. London, casks free.

Sodium Sulphate (Glauber Salts).—£3 12s. 6d. per ton.

Sodium Sulphide Conc. Solid, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

Sodium Sulphide Crystals.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

Sodium Sulphite, Pea Crystals.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

Acid Carbolic Crystals.—4½d. to 5d. per lb. Crude 60's, 1s. 5d. to 1s. 6d.

Acid Cresylic 97/99.—1s. 8d. to 1s. 9d. per gall. Pale, 95%, 1s. 6d. to 1s. 7d. per gall. Dark, 1s. 3d. to 1s. 4d. per gall. Steady.

Anthracene.—A quality, 3d. to 4d. per unit.

Anthracene Oil, Strained.—7d. to 8d. per gall. Unstrained, 6½d. to 7½d. per gall.

Benzol.—Crude 65's, 1s. 1d. to 1s. 3½d. per gall., ex works in tank wagons. Standard Motor, 1s. 8½d. to 1s. 11d. per gall., ex works in tank wagons. Pure, 1s. 10d. to 2s. 3d. per gall., ex works in tank wagons.

Toluol.—90%, 1s. 9½d. to 2s. per gall. Pure, 2s. to 2s. 3d. per gall.

Xylol.—2s. to 2s. 6d. per gall. Pure, 3s. 3d. per gall.

Creosote.—Cresylic, 20/24%, 9d. to 10d. per gall. Standard specification, middle oil, heavy, 6½d. to 7d. per gall.

Naphtha.—Crude, 9d. to 1s. per gall. according to quality. Solvent 90/160, 1s. 5d. to 2s. per gall. Solvent 90/190, 1s. to 1s. 4d. per gall.

Naphthalene Crude.—Drained Creosote Salts, £3 10s. to £5 per ton. Whizzed or hot pressed, £5 10s. to £7 10s.

Naphthalene.—Crystals and Flaked, £11 10s. to £13 per ton, according to districts.

Pitch.—Medium soft, 67s. 6d. to 70s. per ton, according to district. Nominal.

Pyridine.—90/140, 17s. to 20s. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acid Amidonaphthol Disulpho (1-8-2-4).—10s. 9d. per lb.

Acid Anthranilic.—6s. 6d. per lb. 100%.

Acid Benzoic.—1s. 9d. per lb.

Acid Gamma.—8s. per lb.

Acid H.—3s. 3d. per lb. 100% basis d/d.

Acid Naphthionic.—2s. 2d. per lb. 100% basis d/d.

Acid Neville and Winther.—4s. 9d. per lb. 100% basis d/d.

Acid Sulphanilic.—9d. per lb. 100% basis d/d.

Aniline Oil.—7d. per lb. naked at works.

Aniline Salts.—7d. to 7½d. per lb. naked at works.

Benzaldehyde.—2s. 1d. per lb.

Benzidine Base.—3s. 3d. per lb. 100% basis d/d.

***o*-Cresol 29/31° C.**—3d. to 3½d. per lb.

***m*-Cresol 98/100%.**—2s. 1d. to 2s. 3d. per lb.

***p*-Cresol 32/34° C.**—2s. 1d. to 2s. 3d. per lb.

Dichloraniline.—2s. 3d. per lb.

Dimethylaniline.—1s. 11d. to 2s. per lb. d/d. Drums extra.

Dinitrobenzene.—9d. per lb. naked at works.

Dinitrochlorbenzene.—£84 per ton d/d.

Dinitrotoluene.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

Diphenylaniline.—2s. 10d. per lb. d/d.

***a*-Naphthol.**—2s. per lb. d/d.

***B*-Naphthol.**—11d. to 1s. per lb. d/d.

***a*-Naphthylamine.**—1s. 3d. per lb. d/d.

***B*-Naphthylamine.**—3s. 2d. per lb. d/d.

***o*-Nitraniline.**—5s. 9d. per lb.

***m*-Nitraniline.**—3s. 3d. per lb. d/d.

***p*-Nitraniline.**—1s. 9d. per lb. d/d.

Nitrobenzene.—5d. per lb. naked at works.

Nitronaphthalene.—10d. per lb. d/d.

R. Salt.—2s. 4d. per lb. 100% basis d/d.

Sodium Naphthionate.—1s. 9d. per lb. 100% basis d/d.

***o*-Toluidine.**—8d. per lb. naked at works.

***p*-Toluidine.**—2s. 2d. per lb. naked at works.

***m*-Xylidine Acetate.**—2s. 11d. per lb. 100%.

Wood Distillation Products

Acetate of Lime.—Brown, £8. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.

Charcoal.—£7 to £9 per ton, according to grade and locality.

Iron Liquor.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.

Red Liquor.—9½d. to 1s. per gall.

Wood Creosote.—2s. 9d. per gall. Unrefined.

Wood Naphtha, Miscible.—3s. 6d. per gall. 60% O.P. Solvent, 3s. 6d. per gall. 40% O.P.

Wood Tar.—£3 to £5 per ton, according to grade.

Brown Sugar of Lead.—£39 to £40 per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

Arsenic Sulphide, Yellow.—2s. per lb.

Barytes.—£3 10s. to £6 15s. per ton, according to quality.

Cadmium Sulphide.—2s. 9d. per lb.

Carbon Bisulphide.—£20 to £25 per ton, according to quantity.

Carbon Black.—5½d. per lb., ex wharf.

Carbon Tetrachloride.—£46 to £55 per ton, according to quantity, drums extra.

Chromium Oxide, Green.—1s. 2d. per lb.

Diphenylguanidine.—3s. 9d. per lb.

Indiarubber Substitutes, White and Dark.—5½d. to 6½d. per lb.

Lamp Black.—£35 per ton, barrels free.

Lead Hyposulphite.—9d. per lb.

Lithopone, 30%.—£22 10s. per ton.

Mineral Rubber "Rubpron."—£13 12s. 6d. per ton f.o.r. London.

Sulphur.—£9 to £11 per ton, according to quality.

Sulphur Chloride.—4d. per lb., carboys extra.

Sulphur Precip. B.P.—£47 10s. to £50 per ton.

Thiocarbamide.—2s. 6d. to 2s. 9d. per lb. carriage paid.

Thiocarbanilide.—2s. 1d. to 2s. 3d. per lb.

Vermilion, Pale or Deep.—5s. 3d. per lb.

Zinc Sulphide.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb. Keen competition met.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 4d. to 1s. 4½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—6s. 7d. per lb. Resublimed, 7s. 3d.

ACID, SALICYLIC.—1s. 3½d. to 1s. 4½d. per lb. Technical.—10¾d. per lb.

ACID, TANNIC B.P.—2s. 10d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.

AMIDOL.—6s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—12s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—10s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 6d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 6d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. 3d. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 9d. to 12s. 6d. per lb. according to quantity.

BORAX B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 8½d. to 1s. 11d. per lb.; sodium, 1s. 11d. to 2s. 2d. per lb.; ammonium, 2s. 2d. to 2s. 5d. per lb., all spot.

CALCIUM LACTATE.—1s. 2½d. to 1s. 4d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

FORMALDEHYDE.—£40 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—7s. 6d. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. 3d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.

MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%, price reduced; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 19s. 3d. net per lb., Synthetic, 12s. 6d. to 15s. 6d. per lb., according to quality.

MERCURIALS.—Red oxide, 5s. 8d. to 5s. 10d. per lb.; Corrosive sublimate, 4s. to 4s. 2d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 4s. 3d. to 4s. 5d. per lb.

METHYL SALICYLATE.—1s. 7d. per lb.

METHYL SULPHONAL.—16s. 6d. per lb.

METOL.—9s. per lb. British make.

PARAFORMALDEHYDE.—1s. 11d. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—4s. to 4s. 3d. per lb.

PHENAZONE.—6s. to 6s. 3d. per lb.

PHENOLPHTHALEIN.—4s. to 4s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 1d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb. in cwt. lots. Quiet.

POTASSIUM IODIDE.—16s. 8d. to 17s. 5d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6¾d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., in 100 oz. tins.

RESORCIN.—4s. to 5s. per lb., spot.

SACCHARIN.—55s. per lb.

SALOL.—3s. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—11s. 6d. per lb. Limited demand.

TARTAR EMETIC, B.P.—Crystal or Powder, 1s. 10d. to 1s. 11d. per lb.

THYMOL.—12s. to 13s. 9d. per lb.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—9s. 6d. per lb.

AMYL ACETATE.—3s. per lb.

AMYL BUTYRATE.—6s. 6d. per lb.

AMYL SALICYLATE.—3s. 3d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 3d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 3d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 9d. per lb.

CINNAMIC ALDEHYDE NATURAL.—18s. 6d. per lb.

COUMARIN.—11s. 9d. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—9s. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—9s. 6d. per lb.

GERANIOL (PALMAROSA).—19s. 3d. per lb.

GERANIOL.—7s. to 16s. per lb.

HELIOTROPINE.—6s. per lb.

ISO EUGENOL.—14s. per lb.

LINALOL EX BOIS DE ROSE.—19s. per lb.

LINALYL ACETATE.—18s. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—5s. per lb.

MUSK KETONE.—34s. 6d. per lb.

MUSK XYLOL.—8s. per lb.

NEROLIN.—4s. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 6d. per lb.

RHODINOL.—27s. 6d. per lb.

SAFROL.—1s. 8d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—21s. 6d. to 23s. per lb.

Essential Oils

ALMOND OIL.—12s. 6d. per lb.

ANISE OIL.—3s. 1d. per lb.

BERGAMOT OIL.—28s. 6d. per lb.

BOURBON GERANIUM OIL.—11s. 3d. per lb.

CAMPHOR OIL.—60s. per cwt

CINNAMON OIL, LEAF.—5d. per oz.

CASSIA OIL, 80/85%.—9s. 6d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 10d. Ceylon, 2s. per lb.

CLOVE OIL.—6s. 6d. per lb.

EUCALYPTUS OIL, 70/75%.—1s. 10d. per lb.

LAVENDER OIL.—French 38/40%, Esters, 21s. 6d. per lb.

LEMON OIL.—9s. per lb.

LEMONGRASS OIL.—4s. 9d. per lb.

ORANGE OIL, SWEET.—11s. 9d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 65s. per oz. Anatolian, 40s. per oz.

PALMA ROSA OIL.—12s. per lb.

PEPPERMINT OIL.—Wayne County, 75s. per lb. Japanese, 10s. 6d. per lb.

PETITGRAIN OIL.—9s. per lb.

SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, June 3, 1926.

THERE is little improvement to be reported in the prevailing conditions. Many of the larger users of chemicals were closed down for the whole of last week and some have not reopened as we go to press. The effect of the coal strike becomes more and more apparent and little improvement is to be expected whilst present conditions prevail. There are few changes in price to be reported and it is clear that, generally speaking, prices have touched bottom and in any revival of trade reaction is to be expected. There is little export demand and there is no special feature in the market.

General Chemicals

ACETONE is quiet but steady at £81 to £83 per ton.

ACID ACETIC has been in fair demand: Technical 80 per cent. is quoted at £37 to £39 per ton, and Pure at £38 to £40 per ton.

ACID FORMIC.—Few transactions are reported, price is £48 per ton for 85 per cent.

ACID LACTIC is featureless. Price £43 per ton for 50 per cent. grade.

ACID OXALIC.—The market is lifeless. Price unchanged at 3¾d. per lb.

ACID TARTARIC is quiet and uninteresting at about 11½d. per lb.

ALUMINA SULPHATE is in fair demand, price £5 15s. to £6 per ton.

AMMONIUM CHLORIDE.—Tendency remains in buyers' favour, price nominally £18 per ton.

ARSENIC.—There is still nothing doing. The price of £14 per ton can be shaded for important business.

BARIUM CHLORIDE is quiet at about £10 10s. per ton.

EPSOM SALTS.—Firm at £5 15s. per ton.

FORMALDEHYDE is quietly steady at £40 to £41 per ton.

IRON SULPHATE.—There is no change to report.

LEAD ACETATE has been in good demand on export account. White is quoted £45 to £45 10s. per ton, and Brown £43 10s. to £45 per ton.

METHYL ALCOHOL.—Unchanged at £48 per ton.

METHYL ACETONE is very quiet at about £56 to £57 per ton.

POTASSIUM CARBONATE AND CAUSTIC.—Unchanged.

POTASSIUM CHLORATE is a firm market at about 4d. per lb.

POTASSIUM PRUSSIATE is rather slow of sale at 7d. to 7¼d. per lb.

POTASSIUM PERMANGANATE is quoted 6½d. to 7d. per lb. and is in fair demand.

SODA ACETATE is scarce at £21 10s. to £22 per ton. Makers are now well sold over several months ahead.

SODA BICHROMATE.—British makers' prices are unchanged.

SODA NITRITE is in quiet demand at £20 10s. to £21 per ton.

SODA PHOSPHATE.—Unchanged.

SODA PRUSSIATE is in fair demand at 3¾d. to 3⅞d. per lb.

SODA SULPHIDE.—Unchanged.

ZINC SULPHATE.—Unchanged.

Coal Tar Products

Owing to the continuance of the coal strike, prices quoted are in all cases more or less nominal.

90's BENZOL, delivery of which is practically impossible, is quoted at 2s. per gallon, but it is doubtful whether any supplies are available even at this figure.

PURE BENZOL is quoted at 2s. 6d. per gallon.

CREOSOTE OIL is firm at 6½d. per gallon on rails in the provinces, while the price in London is in the region of 7¼d. per gallon.

CRESYLIC ACID is in fairly good demand, the Pale quality 97/99% being worth 2s. per gallon on rails, while the Dark quality 95/97% is quoted at 1s. 9d. to 1s. 10d. per gallon on rails.

SOLVENT NAPHTHA is nominally quoted at 1s. 6d. per gallon.

HEAVY NAPHTHA is steady at 1s. 1d. per gallon on rails.

NAPHTHALENES remain unchanged, the lower grades being worth from £3 10s. to £4 5s. per ton, while the 76/78 quality is worth about £6 10s. per ton, and 74/76 quality about £5 10s. per ton.

Latest Oil Prices

LONDON.—LINSEED OIL firm and 2s. 6d. to 5s. higher. Spot, ex mill, £31; June, £29 17s. 6d.; July-August, £30 2s. 6d.; September-December, £30 12s. 6d.; January-April, £31 10s. RAPE OIL nominal. Crude extracted, spot, £49; technical refined, £51. COTTON OIL firm. Refined common edible, £43; Egyptian crude, £38; and deodorized, £45. TURPENTINE firm and 9d. to 1s. dearer for near. American, spot, 64s. 9d.; June, 63s. 9d.; July-December, 60s. per cwt.

HULL.—LINSEED OIL.—Spot, £30 5s.; June, £30 7s. 6d.; July-August, £30 7s. 6d.; September-December, £20 12s. 6d. COTTON OIL.—Bombay crude, £36; Egyptian crude, £38 5s.; edible refined, £42; technical, £40. CASTOR OIL unchanged. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £43 10s. GROUNDNUT OIL.—Crushed extracted, £46; deodorized, £50. SOYA OIL.—Extracted, £36 10s.; crushed, £36 10s.; deodorised, £40. RAPE OIL.—Crushed extracted, £48 5s.; refined, £50 5s. COD OIL unaltered.

Ammonium Sulphate Prices for June

THE British Sulphate of Ammonia Federation, in a circular just issued, state:—"In view of the uncertain position created by the coal dispute, we have decided to continue selling in the meantime for prompt delivery at the current price of £13 1s. per ton, carriage paid, in 4-ton lots. As soon as we are in a position to do so, we will announce prices for forward delivery and we expect that they will be on a lower level than present prices. We are prepared to book orders now for forward delivery to be invoiced at the price which is eventually fixed for the month of delivery required. With reference to our circular letter 9A/26, claims for payment of the bonus of 2s. per ton in respect of deliveries made up to May 31, 1926, must be sent to us not later than June 15, 1926."

Calcium Cyanamide

INTEREST continues to be shown in the use of this material for the destruction of charlock. Calcium cyanamide contains 19 per cent. nitrogen and about 60 per cent. lime. The price to British farmers for June delivery is £10 6s. per ton for 4-ton lots, carriage paid to any railway station.

Nitrogen Products

Export.—The quantities available for export from the United Kingdom are small on account of the reduced production due to the coal stoppage. The small quantities available are being disposed of on the basis of about £11 per ton, f.o.b. U.K. port in single bags. A steady demand continues from the Far East and the Mediterranean area. The spring demand is now completed and the sulphate purchased would be only partly for immediate consumption. It is bought in anticipation of the rising price scales which producers normally put into operation.

Home.—Home prices for the month of June are retained at the May level of £13 1s. per ton for neutral quality, basis 21·1 per cent. nitrogen, delivered to farmer's nearest station. Buying continued in small quantities right up to the end of May. Normally British producers lower their prices for June delivery, but this year the present prices are being continued until a later date on account of the uncertainty of production.

Nitrate of Soda.—The nitrate market continues quiet. Cargoes c.i.f. chief European port are still changing hands on the basis of about £11 5s. per ton for prompt arrival. Of course a fall clause operates on all stock carried over at the end of June. For the new season nitrate prices have been reduced by 1s. per metric quintal below last season's price, but the fall clause ceases to operate. The low prices at which nitrate has been selling during the present season has been a serious blow to the nitrate companies, who are again agitating for a lower tax on their industry.

Potash Fertilisers

WHILE the trade in potash fertilisers is practically finished for the present season, inquiries are already abroad for potash fertilisers, especially kainit, in the autumn. The autumn use of kainit is a trade which reaches quite considerable proportions, and all the evidence shows that both phosphates and potash should be used in the autumn, both for permanent grassland and on young "seeds," in order to obtain the best results the following season. The results from grassland tests put down last autumn and winter, which are now being demonstrated at the various agricultural shows, are tending to excite considerable interest in the autumn use of potash for next season's crops.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, June 2, 1926.

BUSINESS during the past week while being fairly satisfactory has been curtailed to some extent on account of transport difficulties due to the coal strike. Inquiries for export have been rather more numerous, with a good proportion of orders booked. Prices both for home and continental products are steady, although some articles more immediately connected with the coal industry have been advanced in price owing to short supplies.

Industrial Chemicals

ACID ACETIC, 98/100%.—£55 to £67 per ton, according to quantity and packing c.i.f. U.K. port; 80% pure, £39 to £41 per ton; 80% technical, £38 to £39 per ton.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In limited demand and freely obtainable at 4¾d. per lb., delivered or f.o.b. U.K. ports, with probable reduction for important quantities.

ACID CITRIC, B.P. CRYSTALS.—Rather better inquiry. Prices for spot material advanced to 1s. 3¼d. per lb., less 5%, ex store. The same price named for quantities to come forward.

ACID FORMIC, 85%.—Quoted about £50 per ton, ex wharf, early delivery. Offered from the continent at £49 per ton, c.i.f. U.K. ports.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Spot material quoted 3¾d. per lb., ex store, but this price could probably be shaded. Offered from the continent at 3¼d. per lb. c.i.f. U.K. ports.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In good demand, quoted 11¼d. per lb. less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—On offer from the continent at about £5 8s. 6d. per ton, c.i.f. U.K. ports. Spot material quoted £6 5s. per ton, ex store.

ALUM, LUMP POTASH.—Spot material quoted £9 per ton, ex store. On offer from the continent at about £7 15s. per ton, c.i.f. U.K. ports. Crystal powder quoted about £7 10s. per ton, c.i.f. U.K. ports.

AMMONIA ANHYDROUS.—Imported material selling at about 11¼d. to 11½d. per lb., ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks delivered, or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers crystals of British manufacture quoted £23 10s. to £25 10s. per ton, ex station. Continental on offer at about £21 10s. per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture quoted £18 5s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED CORNISH.—Unchanged at about £15 15s. per ton, ex wharf, early delivery. Spot material on offer at £16 7s. 6d. per ton, ex store.

BARIUM CHLORIDE, 98/100%.—Quoted £8 15s. per ton, c.i.f. U.K. ports. Prompt shipment from the continent. Spot material on offer at about £10 10s. per ton, ex store.

BLEACHING POWDER.—English material unchanged at £9 10s. per ton, ex station. Contracts 20s. per ton less. Continental on offer at about £7 10s. per ton, c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton. Crystals, £23 per ton. Powdered, £24 per ton, carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental rather easier at about £3 17s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—In moderate demand for export, quoted £3 17s. 6d. per ton, c.i.f. U.K. ports. On offer for home consumption at about £3 10s. per ton, f.o.r. works.

COPPER SULPHATE, 99/100%.—Good inquiry for export. English material quoted £23 5s. per ton, f.o.b. U.K. ports. Continental on offer at about £22 5s. per ton, ex wharf.

FORMALDEHYDE, 40%.—Spot material available at about £38 per ton, ex store quoted £37 per ton, c.i.f. U.K. ports, prompt shipment.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental on offer at about £3 5s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material now quoted £36 per ton, ex store.

LEAD, WHITE.—On offer at £37 10s. per ton, ex store.

LEAD ACETATE.—Quoted £44 5s. per ton, c.i.f. U.K. ports, prompt shipment from the continent. Brown, about £38 15s. per ton, c.i.f. U.K.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC, 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton, c.i.f. U.K. ports, according to quantity and destination. Spot material available at about £29 per ton, ex store.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 5s. per ton, ex wharf early delivery. Spot material on offer at £26 10s. per ton, ex store; 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered. Offered from the continent at about £27 10s. per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE (SALTPETRE).—Spot material on offer at about £24 5s. per ton, ex store. Quoted £22 per ton, c.i.f. U.K. ports, prompt shipment.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 7½d. per lb., ex store, spot delivery. To come forward 7d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—Spot material now on offer at about 7½d. per lb., ex store. Offered from the continent for early delivery at a fraction less ex wharf.

SODIUM ACETATE.—Spot material scarce, but limited supplies available at £20 10s. per ton, ex store, quoted £19 15s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised 'quality £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 4½d. per lb., delivered.

SODIUM CARBONATE, SODA CRYSTALS.—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality £1 7s. 6d. per ton more (alkali 58%), £8 12s. 3d. per ton, ex quay or station.

SODIUM CAUSTIC.—76/77%, £17 10s. per ton; 70/72%, £16 2s. 6d. per ton; broken, 60%, £16 12s. 6d. per ton; powdered, 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations spot delivery. Contracts 20s. per ton less.

SODIUM HYPOSULPHITE OF SODA.—Large crystals of English manufacture quoted £9 per ton, ex store. Minimum four ton lots. Pea crystals, £14 10s. per ton, ex station. Continental on offer at about £7 12s. 6d. per ton, c.i.f. U.K. ports.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96/98% refined quality 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Quoted £24 per ton, ex store. Offered from the continent at about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—Quoted 4d. per lb., ex wharf, early delivery. Spot material quoted 4¼d. per lb., ex store.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE, 60/62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyer's works U.K., minimum five ton lots with slight reduction for contracts. 60/62% solid quality offered from the continent at about £9 15s. per ton, c.i.f. U.K. ports. Broken 15s. per ton more. Crystals, 30/32%, £7 per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 10s. per ton; roll, £10 5s. per ton; rock, £10 5s. per ton; floristella, £9 15s. per ton; ground American, £9 per ton, ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 96/98%, quoted £23 15s. per ton, f.o.b. U.K. port; 98/100% solid on offer from the continent at about £21 15s. per ton, c.i.f. U.K. ports; Powdered 20s. per ton extra.

ZINC SULPHATE.—Continental make on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

BENZALDEHYDE.—2s. 1½d. per lb. Some home inquiries.

METANITRANILINE.—3s. 3d. per lb. Some home inquiries

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Some home inquiries.

H. ACID.—3s. 3d. per lb. Some home inquiries.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, June 3, 1926.

The feeling on the chemical market here this week was perhaps more cheerful than at any time since the beginning of May, although this may have been due to a large extent to the Whitsuntide holiday which, in this area, means an almost complete stoppage of business for the week. Actual trade has been slightly better, but it has amounted to relatively little in the aggregate. Taking the market generally, quotations are steady pretty well all round, and it is significant that on balance very little ground has been lost since the beginning of the general strike, only a few lines having displayed anything in the nature of a weakening tendency.

Heavy Chemicals

There is not much business passing in phosphate of soda, but rates are maintained at about £13 per ton. There is a fair amount of inquiry about for hyposulphite of soda at from £9 to £9 5s. per ton for commercial quality and £14 15s. for photographic crystals. Sulphide of soda is in comparatively slow demand, but there is little change in prices from those last quoted, commercial offering at about £9 5s. per ton and 60-65 per cent. concentrated at round £10 15s. Acetate of soda is still held at £20 per ton, although inquiry is rather slow. Bichromate of soda is quiet but steady at 3¼d. per lb. The demand for caustic soda is round about its recent level, and quotations are maintained at from £15 2s. 6d. per ton for 60 per cent. to £17 10s. for 76 per cent. Bleaching powder is still on offer at about £8 10s. per ton. Saltcake is in quiet demand at about £3 per ton. Bicarbonate of soda is selling rather slowly, but prices keep up at round £10 10s. per ton. Alkali is steady and fairly active at £6 15s. per ton. Chlorate of soda is in moderate request with values about unchanged at round 3¼d. per lb. Glauber salts are a dull section at £3 5s. per ton.

Although the current demand for bichromate of potash is on a restricted scale prices are maintained at 4¼d. per lb. Chlorate of potash is also steady at about 4d. per lb. For carbonate of potash the demand is fair and values are about on their recent level at £26 per ton. Caustic potash is in quiet demand at £26 10s. to £27 per ton for 90 per cent. material. Permanganate of potash is quite steady at about 5¼d. per lb. for commercial and 7d. to 7¼d. per lb. for B.P. quality, with inquiry on moderate lines. Yellow prussiate of potash is rather slow at round 7d. per lb.

White powdered arsenic has lost some ground during the past week or two, and about £13 15s. per ton, on rails, for Cornish makes is about to-day's price; the buying of this material is still quiet. Sulphate of copper is fairly steady considering the relatively poor demand, round £23 15s. per ton being quoted. Brown acetate of lime shows little change at £7 15s. per ton, but the grey material continues easy at from £15 10s. to £16. White acetate of lead keeps up at round £45 per ton, with brown offered at up to £41 per ton. Nitrate of lead is quiet but steady at about £40.

Acids and Tar Products

There is some inquiry for acetic acid and values are well held at about £36 10s. for commercial 80 per cent. and £66 to £67 per ton for glacial. Oxalic acid is slow and easy at 3½d. to 3⅝d. per lb. There is slightly more doing in the case of citric acid and quotations are steadier at about 1s. 3¼d. per lb. Tartaric acid has also a better tone at 11¼d. per lb.

Among the coal products there is not much activity in any section at the present time. Pitch is quiet, although nominally steady at about 75s. per ton. With a continued poor demand carbolic crystals are easy at 4¾d. to 5d. per lb., with crude nominal at 1s. 4¾d. per gallon. Creosote oil meets with little inquiry at the moment, but prices are steady at round 6¼d. per gallon. Cresylic acid is in limited request at about 1s. 9d. per gallon.

First Production of Tin in Canada

Tin is being recovered commercially for the first time in the history of mining in Canada by the Consolidated Mining and Smelting Co. of British Columbia. The output, which is from one-half to two tons per day in the form of coniterite, is recovered as a table by-product.

Industrial Methylated Spirits

Amended Regulations for Use and Sale

On December 7, 1925, the Commissioners of Customs and Excise issued an order entitled "The Methylated Spirits (other than Power Methylated Spirits), Regulations, 1925," which provided (*inter alia*) that the substance and combination of substances to be mixed with spirits for the purpose of making industrial methylated spirits (pyridinised) should be to every 95 parts by volume of spirits, five parts by volume of wood naphtha and also one half of one part of crude pyridine to every one hundred parts of the volume of the mixture, the effect of which was to prevent the manufacturer of hot lacquers from selling them to any user unless such lacquers were made from industrial methylated spirits (pyridinised). The regulations came into operation on February 1, 1926, and representations were shortly afterwards made to the Birmingham Chamber of Commerce as to the injurious effect which the use of such lacquers would have on the health of the workers, and, also, on the quality of the finish upon the articles lacquered therewith. Meetings of manufacturers and users of hot lacquers were called and ultimately a request was made to the Commissioners of Customs and Excise to receive a deputation.

On May 3 a deputation was received, and a statement was submitted by Mr. G. H. Wright (secretary of the Chamber), stating that lacquer manufacturers and users of hot lacquers were firmly of opinion that the use of pyridine would be injurious to the health of the operatives. Birmingham was the home of large and important industries whose manufactures were lacquer. Those manufactures included gas and electric light fittings, plumber's brass foundry, and a vast range of general brass foundry. A letter, dated May 12, had been received from H.M. Customs stating that in view of the special circumstances the Commissioners had decided as an experimental measure to allow the use of unpyridinised industrial methylated spirits in making hot lacquers for sale, subject to the following conditions:

1. That each manufacturer of hot lacquers for sale shall make special application to the Commissioners for the use of unpyridinised industrial methylated spirits in the making of such lacquers.
2. That each such manufacturer shall furnish a written undertaking that he will sell such hot lacquers only to known hot lacquer users, and that before sale he will require from each purchaser of such lacquers a written guarantee that the lacquers will be used only in his trade of hot lacquering.
3. That each manufacturer will allow inspection of his books and of the customer's guarantees by an officer of Customs and Excise in order to verify that the undertaking is being observed. In lieu of a separate guarantee for each lot of lacquers supplied for hot lacquering a general guarantee from each customer will be accepted.

The amended requirements of the Government Department are deemed satisfactory in the hot lacquer and allied industries.

U.S. Production of Molybdenum

Although the United States has thousands of molybdenum deposits, ranging in size from those which produce only a few flakes of molybdenite to those in which there are millions of tons of ore, only two molybdenum mines were operated during 1925, according to the Bureau of Mines, Department of Commerce. The market has not yet grown sufficiently large to warrant the operation of other mines. The two which operated are well equipped and are owned by companies which make their own molybdenum compounds to be sold to the steel trade. In Colorado the Climax Molybdenum Co. operated throughout the year at Climax, about 15 miles by rail northeast of Leadville. In New Mexico, the Molybdenum Corporation of America operated its mine in Sulphur Gulch, about 7 miles east of Questa. Together the companies produced 97,665 tons of ore, from which was made 864 short tons of concentrates carrying 72·7 to 85 per cent. molybdenum sulphide, equivalent to 1,154,065 pounds of molybdenum (metal). A few tons of molybdenite are used each year for making chemicals, and a few thousand pounds of molybdenum is used in the electrical industry, but the bulk of the production is used in machine steels.

Company News

SANTA RITA NITRATE CO.—A dividend of 10 per cent., less tax, is announced for the year 1925.

HORACE CORY AND CO.—The directors announce an interim dividend of 4 per cent. on the ordinary shares.

DOMINION GLASS CO.—A dividend of 1¾ per cent. on the common stock is announced for the quarter ended June 30.

LOA NITRATE CO.—The net profit for the past year amounted to £201,126. A dividend for the year of 12½ per cent. is proposed; £8,306 is placed to reserve, and £100,784 is carried forward.

AMERICAN CELLULOSE AND CHEMICAL MANUFACTURING CO.—A dividend of 3½ per cent. has been declared on the 7 per cent. first participating preferred stock, payable on June 30.

IDRIS HYDRAULIC TIN.—The profit for 1925 was £21,258 and £15,777 was brought in. During the year three dividends of 1s. each have been paid, absorbing £18,000; £3,299 is written off property account and £9,452 is carried forward.

ROSARIO NITRATE CO.—The directors have decided to recommend the payment of a final dividend of 2½ per cent., less income tax, in respect of the year ended December 31 last, making a total distribution of 7½ per cent. The sum of £30,457 is carried forward.

E. I. DU PONT DE NEMOURS AND CO.—The directors recently declared an extra dividend of $4.00 per share on the common stock in addition to the regular dividend of 2½ per cent. The regular dividend of 1¾ per cent. was declared on the debenture stock, payable on July 26.

CENTRAL OIL, MINING, AND CHEMICALS TRUST.—The revenue account for the period from August 13, 1925, to May 1 shows a total credit of £7,352. After deducting expenses, there remains £6,436, out of which it is proposed to pay a dividend of 1 per cent., less tax, leaving £836 to be carried forward.

NITRATE PRODUCERS STEAMSHIP CO.—For the year ended April 30 the net profits amounted to £51,172 and £15,833 was brought forward. A final dividend of 3¾ per cent. and a bonus of 2½ per cent. are proposed, making 10 per cent. for the 12 months; £25,000 is put to reserve for depreciation and £14,838 is carried forward.

BURMAH OIL CO.—The report for the year 1925 shows a profit of £2,404,958. The directors recommend a final dividend on the ordinary shares of 4s. 6d. per share, leaving £395,903 to be carried forward. It is proposed to capitalise £1,717,064 of the general reserve and issue to ordinary shareholders as fully paid up by way of capital bonus 1,717,064 ordinary shares in the proportion of one new share for every three existing ordinary shares.

BOOTS PURE DRUG CO.—The profit for the year ended March 31 last amounted to £688,473, against £654,837 last year. Dividends for the year on the preference and preferred ordinary shares have been paid, leaving a balance of £591,723. Interim dividends on the ordinary shares absorb £360,000, leaving a balance of undivided profit for the year of £231,723. The directors recommend that in view of the present unsettled state of trade the last interim dividend paid on March 31, 1926, shall be the final dividend for the year. It is proposed to transfer to the reserve fund £150,000, leaving to be carried forward £234,351.

British Oxygen v. Liquid Air

ON Tuesday, in the King's Bench Division, before Mr. Justice Horridge and a special jury, the British Oxygen Co., Ltd., of Edmonton, sued Liquid Air, Ltd., of Kilburn, claiming damages for alleged libel which they complained had injured their business and reputation.

Mr. K. S. Murray, chairman of the plaintiff company, gave evidence and denied that up to 1922 the company possessed a monopoly of the supply of oxygen in this country. They had never tried to smash all competition.

Later, counsel announced that the parties had come to an agreement and a juror would be withdrawn. The defendants made it clear that they made no imputation against the plaintiffs, and the latter accepted this assurance, and stated that they had no objection to fair competition.

The Judge agreed that the arrangement was satisfactory and a juror was accordingly withdrawn.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to June 12, 1926.

"VELVETEX."

468,675. For pigments for use in the rubber industry. Class 1. Binney and Smith Co. (a corporation organised under the laws of the State of New Jersery, United States of America), 41, East 42nd Street, City and State of New York, United States of America; manufacturers of pigments. March 31, 1926.

Opposition to the Registration of the following Trade Marks can be lodged up to June 19, 1926.

"BLUE SEAL."

464,132. For petroleum jelly and preparations thereof, for use in medicine and pharmacy. Class 3. Chesebrough Manufacturing Co., Consolidated (a corporation organised and existing under the laws of the State of New York, United States of America), 17, State Street, City, County and State of New York, United States of America; manufacturers. November 9, 1925.

"DURALISTIC."

467,715. For liquid bitumen for use in manufactures. Class 4. John Cooke and Son (Huddersfield), Ltd., Little Royd, Huddersfield; dealers in bituminous preparations. March 3, 1926.

Opposition to the Registration of the following Trade Marks can be lodged up to June 26, 1926.

"PIXIE."

467,799 and 467,800. Dyes. Class 1. Wm. Edge and Sons, Ltd., 50, Raphael Street, Bolton, Lancashire; manufacturing chemists and dye merchants. March 5, 1926. (To be Associated. Sect. 24.)

"FORMAZONE."

468,737. For dyes and colours. Class 1. The Alliance Colour and Chemical Co., Ltd., Atlantic Street, Broadheath, near Manchester; manufacturers of dyes and chemicals. April 6, 1926. (To be Associated. Sect. 24.)

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

PORTLAND CEMENT.—The Director-General, India Store Department, Branch No. 10, Belvedere Road, Lambeth, S.E.1, invites tenders for Portland cement of British manufacture.

DRUGGISTS' SUNDRIES.—A firm of mercantile brokers in St. John, New Brunswick, are open to do business on commission, consignment or purchase basis with British producers or exporters for the Maritime Provinces for sale to wholesale druggists. (Reference No. 701.)

OILS AND GREASES.—A Milan firm of commission agents desire the representation for the whole of Italy, on a commission basis, for British manufacturers of the above. (Reference No. 723.)

ANILINE DYES.—Representation of British exporters of these goods is desired by a firm of commission agents in Belgrade. (Reference No. 724.)

PAINT, COLOURS AND VARNISHES.—An Amsterdam agent desires to secure the representation of British manufacturers of the above. (Reference No. 729.)

HEAVY CHEMICALS, DRUGS AND DYES, ETC.—Representation of British makers of artificial silk, technical oils, aniline dyes, drugs, etc., is desired by a well-established firm in Chile. (Reference No. 740.)

DRUGS, PHARMACEUTICAL PRODUCTIONS, CHEMICAL PRODUCTS, ETC.—A commission agent in Lima desires to secure the representation of British firms manufacturing the above lines. (Reference No. 741.)

A stout fence at the top

or

an ambulance below

Insurance, the wisdom of which no one can doubt, is in most cases but an ambulance at the foot of the great cliff of destruction—fire. Many a fall which cripples and inconveniences beyond measure could be prevented by the erection of a stout barrier—a barrier built of appliances capable of dealing effectively with an outbreak of fire.

The great strides made in building construction have certainly modified the fire hazard of yesterday, but the possibility of a serious outbreak in factory, warehouse, office or home can never be eliminated, for the contents remain inflammable.

Genuine Foamite Appliances

The superior efficiency of genuine Foamite Firefoam apparatus is accounted for by the special qualities of Firefoam Liquid—the foam stabiliser—which is a proprietary article only supplied with charges for use in foam apparatus bearing the Foamite Firefoam trade mark.

Firefoam, which is produced by Foamite Extinguishers, Engines and Installations, is a tough and most heat-resisting foam.

The Action of Firefoam

Firefoam consists of millions of bubbles in which is imprisoned carbon-dioxide gas. It floats upon liquids and adheres to solids, even to ceilings.

When a burning surface is covered with Firefoam, the oxygen of the air is immediately excluded and the flames automatically go out. Because the foam persists, re-ignition is impossible.

For Oil and Other Fires

Firefoam is effective upon fires of every description.

The increasing use of inflammable liquids in connection with various manufacturing processes makes Foamite appliances a necessity.

Recent tests demonstrate that Foamite appliances can be used with safety upon electrical fires.

Firefoam does no damage to materials and gives off no injurious fumes.

At Sea and on Land

Suitable Foamite apparatus is available for the protection of every class of property.

To-day, over 25,000 oil tanks of all sizes, and nearly 3,000,000 tons of British shipping are protected by Foamite installations. In addition, thousands of smaller appliances have been supplied to power plants, works, factories, offices and homes in various parts of the world.

Firefoam not only extinguishes fire, but "insulates" against re-ignition. The flame from a Bunsen burner played upon the hand covered with Firefoam.

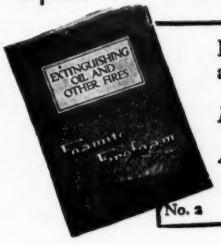
If you instal Foamite appliances you can rest assured that you have the means of combating incipient fires of every description, but Foamite Firefoam Limited offer a complete range of fire-protection devices, including:—

The Firespray Extinguisher.—This is of the soda acid type, and, when operated, gives a powerful jet composed mainly of water. Suitable for use in the case of fires involving loose material, but not upon inflammable liquids.

The Fire-Gun Extinguisher.—This is of the carbon-tetrachloride type, and when the liquid expelled reaches the fire, it changes to a heavy gas, which stifles the flames. The chemical is a non-conductor. A handy appliance for cars.

FOAMITE FIREFOAM LTD., 24-26 MADDOX STREET, LONDON, W.1

Foamite Fire Protection



Please send free copy of "Extinguishing Oil and Other Fires."

Name.....

Address.....

.....

Latest Government Contracts

RECENT Government contracts placed by the various departments include :—

Admiralty

CIVIL ENGINEER-IN-CHIEF'S DEPARTMENT.—Portland Cement : British Standard Cement Co., Ltd., London, E.C. The Cement Marketing Co., Ltd., London, S.W. Salt : Weston and Westall, Ltd., London, E.C. Paint, white oxide of zinc : Burrell and Co., Ltd., London, E. ; N. J. Fenner and H. B. Alder and Co., Ltd., London, E.C. ; Locke, Lançaster and W. W. and R. Johnson and Sons, Ltd., London, E.C.

War Office

Acetylene gas and cylinders : Allen Liversidge and Co., Ltd., London, S.W. Magnesium powder : The Magnesium Co., Ltd., London, S.E. Plant, pulverising : A. Herbert, Ltd., Coventry.

Air Ministry

Oil, linseed, boiled and raw : John L. Seaton and Co., Ltd., Hull.

Crown Agents for the Colonies

Concrete mixers : The Ransome Machinery Co., Ltd., London, S.W. Gas plant, etc. : Mansfield and Sons, Ltd., Birkenhead. Gelignite : Nobel's Explosives Co., London, S.W. Lint : Vernon and Co., Ltd., Preston. Neo salvarsan : A. C. Henry, London, E.C. Novarsenobillon : May and Baker, Ltd., Battersea. Paint : Docker Bros., London, E.C. Paint, etc. : Torbay Paint Co., Ltd., London, E.C. Phosphor bronze, etc. : The Phosphor Bronze Co., Ltd. London, S.E.

Indian Government

STORES DEPARTMENT.—Paint, white lead, dry : The Bangalore White Lead Syndicate, Ltd., Bangalore. Paint, white zinc : Turner Morrison and Co., Calcutta. Cement : C. Macdonald and Co., Bombay. Creosote : The Shalimas Tar Distillery and Waterproof Manufacturing Co., Calcutta. Lubricants : Pure mineral oil, containing tallow : Valvoline Oil Co., Calcutta.

Chilean Nitrate Prices

THE Chilean Nitrate Committee, London, have issued the following circular :—

"The Association of Chilean Nitrate Producers have not yet fixed a scale of prices for the season June, 1926, to May, 1927. In the meantime they are willing to sell nitrate for June-July shipment on the following conditions :—

"(1) Buyers must satisfy the Association that they have already fixed on or are about to fix tonnage to list the nitrate in June-July.

"(2) The contract prices shall be the same as last year—i.e., 19s. 3d. for June contracts and 19s. 4d. for July contracts.

"(3) In the event of the scale to be announced fixing lower prices for June-July than 19s. 3d. and 19s. 4d., the contracts now entered into shall be modified, bringing the price down to the lower level thus fixed for each month.

"(4) If for any reason the Association subsequently should announce a reduction in prices, the contracts shall be modified so as to bring the price down to the level of the lowest price fixed by the Association for any delivery before May 31, 1927.

"Contracts for June-July delivery will therefore contain the following clause :—The price established in the present contract, which is a maximum, is provisional, and shall be readjusted once the directorate of the Asociacion de Productores de Salitre de Chile fix a definite price for this delivery. The buyer is protected by a fall clause guaranteeing that neither for this delivery nor any other later delivery up to May 31, 1927, shall a lower price be fixed by the Association than that which shall finally apply to the present contract."

Liquidation of Iona Laboratories

A MEETING of the creditors of Iona Laboratories, Ltd., toilet speciality manufacturers, 268b, Stockport Road, Manchester (in voluntary liquidation), was held on May 26, when the statement of affairs disclosed liabilities £2,075 4s. 4d., assets £310, and a deficiency of £1,765 4s. 4d. The liquidator said that the company was incorporated on June 2, 1925, with a capital of £4,000, divided into £1 shares, of which 1,000 were 7½ per cent. non-cumulative preference. It was formed to acquire an existing business, and 1,000 shares were allotted as fully paid in respect of formulæ taken over by the company. The sales had not averaged more than about £35 per week, and losses had been incurred throughout. It was resolved that providing the cash creditors agreed to withdraw their claims the voluntary liquidation of the company should be continued with Mr. G. McNeill, of 2, Marsden Street, Manchester, as liquidator, together with a committee consisting of Messrs. Sessions, Ltd., International Bottle Co., and Mr. Parkin S. Booth, accountant, of the Association of Manufacturing chemists, Ltd., 2, Bixteth Street, Liverpool. The liquidator stated that the cash claims would be withdrawn.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BURROUGHS AND CO., City Mills, High Street, Stratford, paint manufacturers. (C.C., 5/6/26.) £15 17s. February 10.

HANDFIELD CHEMICAL CO., Boothfield, Waterfoot, near Manchester, chemical manufacturers. (C.C., 5/6/26.) £12 19s. 6d. April 13.

THREE PRICE CLEANERS, LTD., 44, Sussex Street, Middlesbrough, cleaners and dyers. (C.C., 5/6/26.) £14. April 9.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

HORSFORTH DYEING AND FINISHING CO., LTD. (late HOWARTH, WILD AND HARRISON, LTD.) (M., 5/6/26.) Registered May 12, £300 mortgage, to R. Armstrong, 4, Butts Court, Leeds, solicitor, and another ; charged on Hawkesworth Road Dyeworks, Woodside Horsforth, also general charge. *£2,500. December 31, 1924.

WATERMAN (G.), LTD., Croydon, dyers. (M., 5/6/26.) Registered May 13, £13,000 mortgage, to H. McConnell, 22, St. Peters Road, Croydon, dyer ; charged on dye works, Purley Way and Mill Lane, Croydon. *——. March 15, 1926.

Receivership

WHITE BAND MANUFACTURING CO., LTD. (R., 5/6/26.) P. B. Gilroy, of College House, Little College Street, E.C.4, C.A., was appointed Receiver and Manager by order of Court, dated May 21, 1926.

London Gazette, &c.

Partnership Dissolved

HAY, STEVEN, AND CO., chemical manufacturers, Kelvindock Chemical Works, Maryhill, Glasgow.—Notice is given, under date May 28, 1926, by the testamentary trustees and executors of Alexander Beith Hay, and by Gilbert Beith Hay, that on the retiral from business in 1923 of Alexander Beith Hay, chemical manufacturer, Burlington House, Maryhill, Glasgow, the business conducted by him in name of Hay, Steven and Co., Kelvindock Chemical Works, was taken over by Gilbert Beith Hay, chemical manufacturer there, who has since carried on the business in that name, and is liable alone for the debts and obligations of the said business.